EMBLEMS OF THE RISING SUN

IMPERIAL JAPANESE ARMY AIR FORCE UNIT MARKINGS

Peter Scott

HIKOKI PUBLICATIONS

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***Caption to front cover**: A Nakajima Ki 43-1 'Oscar' of 1 Sentai, 3 Chutai, based in Thailand in early 1942, seen against a background of cherry blossoms*

***Caption to rear cover:** A close view of the 68 Sentai, 2 Chutai emblem on the tail of a Kawasaki Ki 61-I Ko captured at Cape Gloucester, New Britain and photographed on 12 January 1944*

***Caption to title page:** A Mitsubishi Ki 1-II heavy bomber of an unidentified unit drones towards Nanking through the summer haze somewhere over the Yellow River in China, 1938*

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INTRODUCTION

IJAAF Unit Markings

The intention of this book is to present the unit markings of the Imperial Japanese Army Air Force (IJAAF) sentai, together with their various superior, subordinate and independent units, in an ordered pictorial format. The unit markings of the various types of training schools are also included. Those *'Taitari'* (Special Attack or suicide) formations that were ultimately re-designated within conventional sentai are covered. An attempt has been made to detail some of the dedicated Special Attack units themselves, of which there are estimated to have been over 170 units. The many personal markings of individual air crew which also appeared on otherwise unmarked aircraft are excluded.

At this stage, it is appropriate to consider the structure of the IJAAF (Table1). Its primary strategic elements were the five *Kokugun* (Air Armies). These comprised:
1 Kokugun - 1st. (Home) Air Army
2 Kokugun - 2nd. (Manchuria) Air Army
3 Kokugun - 3rd. (Southern) Air Army
4 Kokugun - 4th. (New Guinea) Air Army (formed 1943)
5 Kokugun - 5th. (China) Air Army (formed 1944)

1 Above: *This well-worn dark green Nakajima Ki 43-II Ko of 25 Sentai was once flown by the 2nd Chutai leader, 1st Lt Nakakazu Ozaki, as shown by the white-outlined red band around the fuselage. Flying from Jogai airfield near Nanking in China from 2 March 1943, he scored 19 victories, including six B-24s, earning the nickname 'Big-Bird Killer', before his death in action on 27 December 1943 when he deliberately rammed an enemy aircraft*

In turn, the subordinate formations of the kokugun were the *Hikoshidan* (Air Divisions), with two or three to a kokugun. Next in line were, generally, two or more *Hikodan* (Air Brigades) to a hikoshidan. Initially, the next basic units were the *Hiko* Rentai (Air Regiment), usually with four *Chutai* (Company) and the *Hiko Daitai* (Air Battalion), with two chutai. In general, there were three rentai to a hikodan.

The rentai and daitai were intended to have a mixed selection of aircraft, but they were found to be tactically inflexible when the units were committed in the war against China, with the rentai being too big and the daitai being too small to be effective. Therefore, they were replaced by *Hiko Sentai* (Air Groups), which were of an intermediate size. In contrast to the rentai and daitai, the sentai generally had a single task, e.g. solely fighters, or bombers, or transport, or reconnaissance. These new units consisted of a *Sentai Hombu* (headquarters flight) and two or more Chutai (company). Each chutai normally comprised three *Shotai* (flight), each of three aircraft, although this was raised to four by the late war years, when the tactical disadvantages of the three (rather than four) aircraft formation was recognised. With a few exceptions, the sentai were intended to operate a single aircraft type, although the amount of operational types actually proliferated within many of the sentai, towards the end of WW2. The reasons for this included partial re-equipment with new types and general equipment shortages.

Prior to the onset of unit identifiers, many aircraft of all types carried black fuselage side numbers. Fighters and other single-engined aircraft commonly carried a single inscription below the cockpit, *'Aikoku'*, which translates as 'Patriotism'. Occasionally, some machines also carried presentation inscriptions on their fuselage, aft of the hinomaru on both sides, which signified the donor of the aircraft. A number included within this inscription indicated that the donor had purchased more than one aircraft. With the onset of com-bat operations, the patriotic slogans were removed and the presentation inscriptions were greatly reduced in size.

Most early units had no especial unit identification markings. What markings they did carry were confined to rudder striping, which related to the chutai and / or shotai, or to the individual aircraft itself. Many of these early markings consisted of varying numbers of stripes of various colours, which were predominantly red, blue or white. The fundamental unit markings themselves were adopted and developed from the mid-30s onwards, primarily from the need to identify the proliferation of new units that were forming as a result of the war in China. It was also found that a distinctive unit identity contributed to 'esprit de corps' and was a morale booster. All of the major formations (from independent chutai upwards) adopted some form of unit identification symbol, as did the sundry training units and special purpose units, although some early rentai, daitai and sentai flew without any markings for a period after their establishment. Many units applied their unit marking to the tail-plane, but some initially relied upon fuselage and wing striping for unit identification, e.g. 50 and 64 Sentai. These units generally developed their fuselage markings into one which was applied to the tail. Almost all IJAAF units ultimately adopted the tail-plane as a canvas upon which to bear their unit markings, with the notable exception of 95 Sentai, which solely carried fuselage identifiers on their bombers throughout its existence.

In common with most other major air forces, the IJAAF established a substantial number of smaller operational units, which were known as *Dokuritsu Chutai* (Independent Companies). All of these units bore unit devices on their tails, with the exception of the fuselage identifiers borne by 18 Chutai, which carried a small tiger insignia (and which was known as a 'kitten' to their crews) and 84 Chutai, who relied upon longitudinal striping. As the IJAAF expanded throughout the war, these independent units were often called upon to form the basis of new sentai, e.g. 10 Dokuritsu Chutai formed 25 Sentai in 1942. Similarly, as some sentai sustained severe combat losses or for logistical purposes, they were downgraded to chutai status e.g. 28 Sentai became 28 Dokuritsu Chutai in 1941. In both events, the unit device of the parent unit frequently served as the basis for the tail markings of the new unit, in much the same way that, earlier, some of the newly formed sentai had inherited the device of their parent rentai and daitai although, in this case, it is unconfirmed whether 28 Dokuritsu Chutai actually did so. It was not uncommon for a sentai to be reduced in size, with a view to forming additional units by the use of experienced personnel as cadres, e.g. 83 Sentai. Similarly, sentai were often reduced through attrition to chutai strength, or even decimated and then were reformed into the original sentai, possibly in a different location and using different equipment, e.g. 3 Sentai was destroyed at Leyte in 1944 and then re-formed in Japan on the Ki-102 *'Randy'*. Training units were also used as the basis for the formation of new units and their own devices frequently lived on in the newly established units. *Dokuritsu Hikotai* (Independent Wings) were also formed from chutai and sentai as required and, again, each had its own tail device.

It is therefore apparent that the IJAAF adopted a coloured tail decoration for identification purposes, in much the same way that the Royal Air Force adopted an alphabetic squadron identification system; the USAAF in the U.K had a similar alphabetic combination (then an alpha-numeric system when the alphabetic combinations were exhausted), and the Luftwaffe embraced an alpha-numeric Geschwader identifier for aircraft other than fighters. The corollary was that the Allies ultimately adopted a similar system to the IJAAF, using coloured geometric symbols or devices, when they gained air superiority and used large formations (e.g. as did the RAF main bomber force when it was used in daylight operations, or the US 9th Air Force fighter-bomber units). Conversely, the IJAAF units were obliged to tone down or obliterate their own markings when the tide of war turned against Japan.

The basic Japanese unit identifier was not founded upon a single common system, but was initiated at unit level and was based around various themes instead. These took the form of :

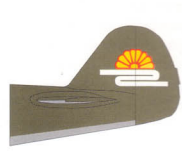
- plain areas of colour;
- coloured bands;
- geometric shapes;
- devices of religious significance e.g. Mount Fuji and the sacred chrysanthemum;
- local geographic features e.g. mountains and rivers;
- the name of the home air base;
- bolts of lightning, darts and arrows;
- birds and animals;
- a pictorial adaptation of the Sentai or Chutai number (which frequently requires a degree of lateral thinking to interpret, particularly since the port-side markings were generally a mirror image of the starboard side originals and so lost the flavour of the prototype design);
- or a simple number code for when imagination failed although, even then, the sentai design could be based on a derivation of a Roman-style number e.g. as portrayed on the Ki-100s of 5 Sentai. Some of the maritime strike units used a number code similar to those IJNAF units operating in the same role.

The following plates give a taste of the general themes:

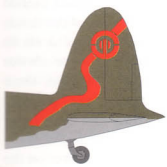
170 Sentai used a plain white tail, which was common for each chutai.

59 Sentai was one of many to use bar markings, varying in colour for each chutai.

6 Sentai used geometric shapes towards the end of the war, varying in colour for each chutai.

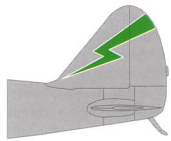


22 Sentai originally used the Royal Mum(chrysanthemum), although the river took differing chutai colours.



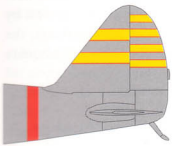
The original 6 Sentai markings showed the river next to the base and were common to all aircraft.

The original 13 Sentai markings, indicated the base name, Kakogawa



11 Sentai's lightning bolt was a common theme, here showing the green colouring of the relatively uncommon 4 Chutai.

108 Sentai chose a bird motif, which was then displayed in chutai colours.



24 Sentai, with two bars representing '20' and four extra bars, for the digits

20 Sentai's later tail code was very similar in form to IJNAF kokutai coding

The markings were painted onto the aircraft by the chutai ground crew, with varying degrees of competence. Of course, some were works of art but, much more often, other markings were painted freehand. They often showed coarse brush strokes, varying thickness of line, adjacent lining not being parallel and, occasionally, paint runs and dribbles. Often, markings on adjacent aircraft within the same chutai bore only a similarity to each other.

Generally, the tail markings themselves were further colour-coded, so that each chutai and the sentai hombu were separately distinguished, as will become apparent by studying the following unit plates. Frequently, the tail-plane of the Commanding Officer's aircraft received more elaborate treatment. It was not uncommon for sentai hombu aircraft to be additionally decorated with extra blue and/or white striping on the wings and fuselage, in order to identify the unit leaders and this practice continued until the end of the war.

Having established that unit identification was created at unit level, it should come as no surprise that the colour-coding of the integral chutai were similarly not defined. The most common pattern was blue for the HQ itself, with white for 1 Chutai, red for 2 Chutai and yellow for 3 Chutai. In the event of a fourth chutai being within the unit, this almost always wore a green identifier. Two Sentai (111 and 200) had five and six chutai respectively, but apparently made no especial provision for their identification. The adoption of blue itself for the sentai hombu was not compulsory and this colour was often used within some sentai as an alternative chutai colour as, indeed, was brown.

Consistency of markings, however, was not a strong point within the IJAAF and some sentai painted the unit marking in a standard colour. They then identified the individual chutai by means of coloured fin tips and/or spinners. At various stages throughout the war, units painted the entire propeller red e.g. 244 and 246 Sentai's Nates (which also had red, rather than yellow, wing leading edge identification stripes). However, some aircraft never received any form of unit identification, with this feature being particularly common among transport units, e.g. nine transport units were generally decimated during the course of their transit deployment to New Guinea, or shortly afterwards, so few of their converted Helen bombers gained the opportunity to carry identifiers.

Previous works have indicated that almost all aircraft bore unit markings, but examination of almost any current source belies this. An analysis of common photographs showed that broadly 27% of all aircraft of all types were undecorated and, consequently, this proportion is reflected to some degree in the following plates. It is a curiosity that this figure was consistent to within a few percentage points for almost all types, excluding transports. It is also worth pointing out that this proportion was reflected in photographs of wrecked or captured machines too, whose state provided a finite quality, in that they were most unlikely to be decorated after the photograph was taken.

Those units with a significant history tended to retain the theme of their original identifier, although it may well have undergone some modification over time. One unit that repeatedly changed its markings was 5 Sentai, which took heavy and repeated losses. As a direct consequence, the sentai markings were periodically changed as a morale booster, in contrast to both RAF and USAAF units in similar circumstances, which retained their heraldry and symbols for precisely the same reason. The chutai colours themselves occasionally changed when the sentai re-equipped with a new type of aircraft, particularly in the case of 5 Sentai in 1942, when all three chutai swapped colours. 59 Sentai also changed their chutai colours in 1944, for the same reason. A further example of a colour change involved 244 Sentai, which was obliged to change coloured tail-planes for coloured chutai devices, when their machines were finally camouflaged at the onset of extremely severe airfield attacks. However, even this unit, which was renowned for its flamboyance, retained the original bright markings on some of their original surviving machines until the war's end.

The '*Shimbu-tai*' Special Attack Units

The IJAAF established dedicated suicide units with similar objectives to the kamikaze aircraft of the Imperial Japanese Navy. The Hitachi *Hikoshidan Hikotai* (Instructor Air Division) alone established 57 such units. Although around 170 units were formed, not all were given unit numbers. These adopted names instead e.g. *Kikusui* (using the Helen) and *Giretsu* (flying the Sally). The Shimbu-tai were used for the first time during operations around the Philippines, as were regular units operating in a similar role. Having had the experience of these large-scale suicide attacks, followed by those off Okinawa, the Allied leadership realised that anything capable of flight was likely to be used in a similar role against Allied shipping during the forthcoming invasion of Japan. In late March 1945, a temporary lull in the B-29 bombing campaign against Japanese industrial targets (due to a shortage of incendiary bombs) was used to good effect by directing the Superfortresses against airfields used by the Special Attack units.

The Shimbu-tai used markings for the same purpose as the regular formations, i.e. recognition and esprit de corps. The tail was the normal position for the device, apart from a few exceptions where the marking was carried on the nose or fuselage sides. However, the aircraft involved were intended to be used in a one-way flight only and each unit was expected to have been expended after two missions at the most. Consequently, many of the designs reflected the role of these units to a greater degree, with winged bombs, arrows, eagles, death's heads and lightning bolts being particularly popular. Slogans and / or the names of the aircrew were also painted onto their aircraft immediately prior to their final flight. Often these were the only identifiers on some of the aircraft although, again, many aircraft carried nothing more than numerals or, in the case of the *Banda* unit (equipped with with Lilys), no markings at all. In common with the regular formations, the device reflected the skills of the painter. Within these limitations, many of the markings were carefully executed, probably reflecting the fact that the aircrew were about to make their final flight. The formation leaders generally carried bright lightning flashes on the fuselage for recognition purposes.

Although there were over 170 units (the highest number so far located is 182), notionally each with twelve machines and so comprising around 2000 attack aircraft, by no means all of these units have ever been identified. The reasons here include the destruction of the unit by bombing prior to the application of unit markings, the non-carriage of markings and the lack of adequate photographic documentation.

Allied Code Names and Kitai Number

Having already mentioned several aircraft types as illustrative examples, it is now appropriate to explain how they acquired their own identification. The Japanese had several distinct identification philosophies, identifying types by:

1 *Kitai* (or 'Type') number (abbreviated to Ki-), with sub-sets for modifications, e.g. Mitsubishi Ki-1-II

2 Manufacturer's number e.g. Mitsubishi Army Type 93 Heavy Bomber (which is the same aeroplane as above). The number relates to the year in which the aircraft was accepted for service, the Japanese calendar being 660 years ahead of the West, e.g. 1933AD was 2593 in Japan.

3 Some IJAAF (and also some IJNAF) types were additionally given popular names for propaganda purposes, in much the same manner as Allied aircraft.

4 Imported types in both services were given separate designations as well and one Army type, the Fiat BR.20, also received an Allied reporting code (as the 'Ruth').

Sub-types, armament and power-plant modifications of later aircraft (i.e. those with a higher Ki-number) were covered by giving the Ki- number a suffix e.g. *-kai, -hei, -otsu,* and these were the equivalent of Allied aircraft mark numbers. However, this suffix was not necessarily an official one and the earlier sub-set was also used.

For ease of recognition purposes within this volume, however, it has been decided to identify all aircraft onwards with reference to the code names adopted by the Allies. These had been accepted in the first place as a means for both aircrew and intelligence officers to recognise Japanese aircraft by the use of a standardised format, rather than by the more cumbersome Japanese processes outlined above. The Allied code originally dictated that all fighters received male names, with the remainder being named after females, although it was developed later, with trainers named after trees.

Fuselage striping

Longitudinal fuselage stripes were quite common until 1943, when they were used as both unit identifiers and for decorative purposes, e.g. by 50 Sentai and 84 Dokuritsu Chutai. However, only 244 Sentai retained them for much longer, until this unit's aircraft received overall camouflage but, again, their older machines retained their original decoration.

Vertical fuselage striping, although occasionally used for decoration, was generally used to indicate the status of the aircraft within the unit, when used in conjunction with the tail colours of the parent unit device. The striping generally took the form of one band for the lead aircraft, two bands for the second, three bands for the third, but none for the fourth. The bands themselves could also be colour-coded e.g. the Nates of 1 Sentai. In some cases, this type of individual aircraft identifier was also applied horizontally to the tail area, often superimposed over the sentai identifier e.g. over the coloured rudders of 1 Sentai and the Lilys of 3 Sentai.

Tactical and command markings

These appeared in white or red with white outline. It is therefore easy to confuse these tactical markings with sentai / chutai / shotai striping.

The Combat Band

A vertical white fuselage band, known as *'senchi hyoshiki'* (battlefield insignia), was generally carried forwards of the tailplane by front-line aircraft. It had no defined position and, as will be seen on the accompanying colour plates, appeared from between mid-fuselage length to the base of the fin. It was also carried by almost all captured aircraft, including B-17s under test at Tachikawa and also upon three captured Hawker Hurricanes that actually appeared on the Order of Battle for 64 Sentai in mid-1942 (One of these at least also carried the sentai insignia). The practice of carrying the actual combat band itself declined from 1943 onwards. Red and white fuselage bands were carried in a similar manner and indicated either the civil or experimental status of the aircraft, while a red and yellow band indicated a trainer type.

The Hinomaru

The red national *hinomaru* identification marking (literally the 'sun's red disc') was generally applied in six places, namely above and below both wings and on either side of the fuselage. The practice of having it on the fuselage sides was generally discontinued from 1937 to 1942, when it re-appeared for additional recognition purposes. On light coloured aircraft, it was generally not outlined but, as darker camouflage finishes began to be applied, a 75mm wide white outline was added to enhance the hinomaru. Since the hinomaru was obviously larger on a bomber compared to a fighter, this occasionally gives the impression that the white outlines were wider on fighters than they actually were. However, the corollary here is that many white outlines were field-applied after the application of camouflage, with many white outlines clearly not being 75mm wide or circular either. It has been suggested that one reason for applying markings that were physically not round upon a curved fuselage surface, was that they were intended to appear as round, when the aircraft was seen at a distance.

Frequently, a field-applied camouflage was painted around the hinomaru and the white outline was therefore unnecessary and this produced a halo effect around the hinomaru. Over time, the red pigment of the upper-surface hinomaru generally oxidised into what has been termed a blood-red colour, which has been replicated in some of the following side profiles. Nevertheless, the hinomaru of a few machines clearly faded to an orange or pink shade. Obviously, the lower surface hinomaru were not exposed to sunlight to the same degree. On wartime wrecks still extant in New Guinea, some underside hinomaru have remained bright red. Towards the final stages of the war, the white outline was frequently not applied to new aircraft, to prevent compromising the overall camouflage and, on other machines, it was partially over-painted in a less conspicuous colour, for the same reason. However, a curious departure occurred in at least two instances (one being an Army Frank and the other being a Navy Jack), where a red outline was applied to the white outline as well, with both machines being in 1945-style overall natural metal finish.

It was also noticed that many of the captured Allied

aircraft that were test-flown by the IJAAF were re-painted. Here, the applied hinomaru had a particularly high gloss finish. Finally, it should be noted that several of the higher command-based units adopted modified hinomaru as the basis for their unit marking e.g. *Kokusogun Shireibu Hikohan* (Combined Air Command), 3 Kokugun (3 Air Army) and 2 Hikoshidan Shireibu Hikohan (2 Air Brigade).

The use of identification numbers

Prior to and, for a period, after the initial use of unit devices, aircraft generally carried a black fuselage number, aft of the hinomaru. This number generally bore no relationship to the production quantity of the type, for security reasons. As the unit identifier system was developed, the use of number identifiers declined, but experienced a renaissance during the later war years. Identification numbers were then derived in two manners, namely:

1) from one allotted to a machine by the unit, or

2) from the last two digits of the manufacturer's production number (or from the last three digits, in the case of 110 Sentai).

The practice of aircraft numbering was frequent, but the same number was never used twice within a unit, possibly for superstitious reasons. Numbers were applied to cowlings, fuselage sides, tail-fins, rudders and undercarriage doors, with the latter position (when used) duplicating a number applied in one of the other locations. In the same way as any other unit-applied marking carried on IJAAF aircraft, they were applied with varying levels of dexterity. Furthermore, they were frequently painted over the unit identifier of those units that relied on geometric shapes or banding for identification, e.g. upon most of the Franks of 72 Sentai. Some other units e.g. 73 Sentai, adopted the rudder bottom as a location and painted the numbers over a patch painted in the chutai colour.

Aircraft camouflage

It is not the intention to dwell upon this aspect in any great detail, particularly since Donald Thorpe (1968), Ian Baker (1992) and Peter Fearis (1998) have already published excellent works. Messrs. Jim Lansdale and James Long also have work due for imminent release. However, it is appropriate to explain the usage of camouflage at this stage and an examination of the plates will reveal many of the schemes. Essentially, five distinct styles were used, which permitted numerous permutations with the available colours:

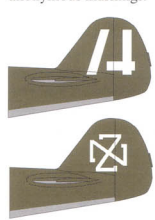
1 **overall colour** in light grey, shades of green, red or orange (for trainers), or white (for aircraft permitted, by the Allies, to fly under the terms of the surrender).
2 **segmented colour** in alternate stripes/bands of greens and browns, generally over light grey undersides.
3 **mottled or sprayed** colour in green(s) or brown(s), over a light grey or an unpainted natural metal base.
4 **solid colouring** of green, brown, maroon, light or dark grey or black, light grey or unpainted lower surface.
5 **unpainted**, but often with the control surfaces painted light grey-green.

Camouflage was often applied retrospectively in the field and, in general, care was taken to avoid covering unit markings. Consequently, many unit markings on field-painted aircraft have a halo effect around them.

The unit devices

The first section of the following drawings is devoted to the devices themselves. Mention has already been made of to the variance in application skills of the painters of the original unit devices. The following unit devices have therefore been designed to show an 'average' device for each unit. As mentioned earlier, aircraft identification numbers were frequently carried. Both these and the slogans carried by the Shimbu-tai units have generally been omitted from the plates covering the unit markings, in order to ensure clarity.

Various previous works have contained captioning errors, resulting in the following mis-identified and still anonymous markings:



These Franks have been attributed to 14 and 74 Sentai respectively, despite both units being dedicated bomber units. These are much more likely to have been Special Attack markings, but have defied positive identification.

Similarly, other markings have been wrongly identified in the past and the errors have been perpetuated in subsequent works and articles.

One of the most frequent errors is confusion of the boomerang-shaped 248 Sentai device, which has often been mistakenly attributed to 77 Sentai, although bearing no relationship to their markings.

Another area of concern lies with some unit markings that were produced in the form of drawings in the mid-1960s. In the interim, these appear to have been accepted as the definitive unit markings and, indeed, have been produced both on specialist decal sheets and on decal sheets within model kits, despite the lack of any photographic evidence to their provenance. These markings particularly concern 13 Sentai, but the famous and widely-reproduced wave shape of 29 Sentai also gives rise to considerable doubt. Most probably, this marking was originally mistaken for the device of a Special Attack unit.

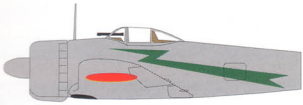
Furthermore, no photographic evidence has been found to confirm the carriage of lightning stripes on the 'Oscars' of 59 Sentai, which were reportedly worn for a short period, following re-equipment from the 'Nate'. The Nate definitely bore these stripes.

'13 Sentai'

'13' Sentai'

'13 Sentai'

'29 Sentai'



'59 Sentai'

Similarly, 2 Sentai and 17 Sentai have occasionally been represented by these artistic impressions:

'2 Sentai'

'17 Sentai'

Photographic confirmation is still awaited for the devices of 9 and 20 Sentai.

Although over sixty sentai are stated to have consistently used the blue - white - red - yellow format, it has proven to be practically impossible to differentiate blue from red in any of the many monochrome photographs examined.

Accordingly, most of the sentai hombu in the following plates have been left blank, in the absence of authentic colour details. Any additional information to fill in these blanks would be welcomed, through the Publishers.

In conjunction with all of the aforementioned camouflage schemes, the unit decorations provided the IJAAF with a rich and distinctive identity which, in its early stages, was certainly on a larger scale than comparably-sized contemporary air forces.

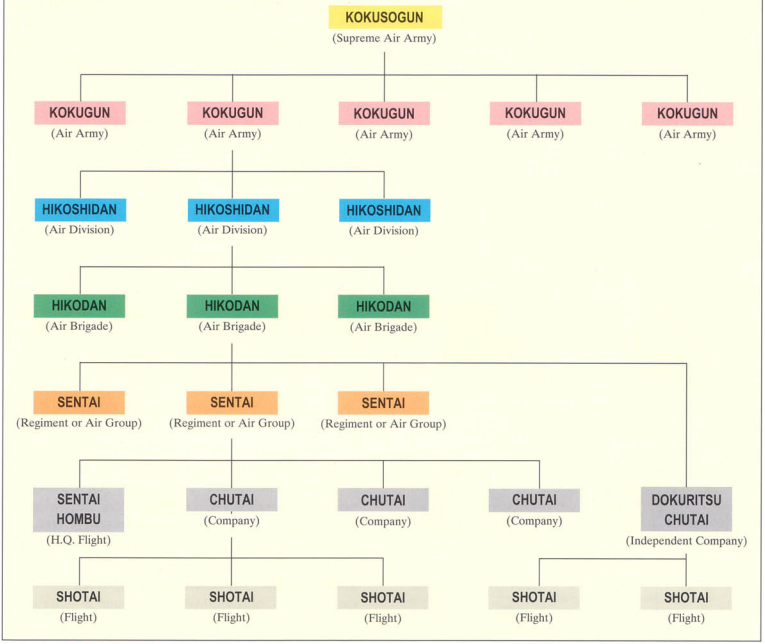
The plates

The aircraft have been selected to show the diversity of paint schemes that were carried, in conjunction with their unit markings. Some of the selected aircraft were deliberately chosen because their markings were different in some way from those of the rest of the unit. It will be readily apparent that some aircraft have been included that have no unit markings. This was a deliberate policy that reflected both the amount of unmarked IJAAF machines and also that several units, particularly transport units, tended to operate un-identified aircraft as a matter of course. The aircraft have been presented chronologically in kitai number order, then by date and sub-type, with the intention of showing how the sundry markings changed, as well as illustrating both the proliferation and variety of camouflage schemes. The profiles are not drawn to a constant scale, (most being to 1/72, bombers being to 1/96 or 1/144) so the reader is invited to bear this in mind when viewing aircraft of certain consecutive kitai numbers, e.g. Ki-17 and Ki-20, which were dimensional opposites.

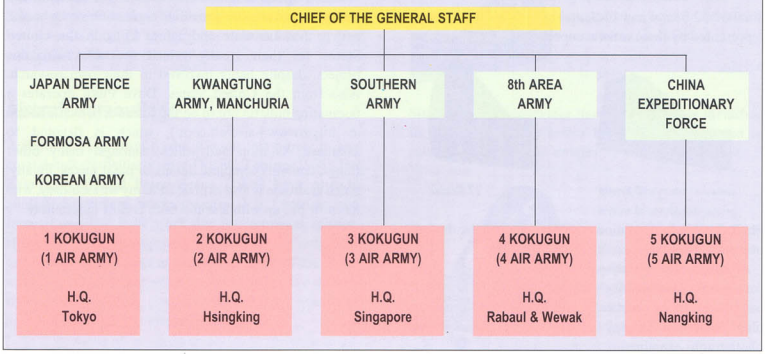
Acknowledgements

A lot of people have helped with this project. Many thanks are due to Peter Starkings of the Japanese Aviation Special Interest Group of IPMS (UK); to Ian Baker in Australia for providing copies of his own books; and to Jim Lansdale and James Long in the United States, for their greatly valued assistance with this project, despite being involved in their own research. Also from the United States, Dave Pluth operates a fascinating bulletin board on the Internet (which is found at http://www.j-aircraft.com/), which is devoted to Japanese Aviation and which, amongst many other things, contains complete details of paint mixes. Finally, much gratitude is also expressed to my wife Lindsey, who has now put up with a sentai bore almost indefinitely.

1. Theoretical Unit Structure of the Imperial Japanese Army Air Force



2. Actual High Command Structure of the Imperial Japanese Army Air Force



3. IJAAF Order of Battle, 1936
Air Command (KOKU HEIDAN)

1 HIKODAN (1 Air Brigade)

1 Hiko Rentai*	4 fighter chutai	Kasumigaura
2 Hiko Rentai	2 reconnaissance chutai	Kasumigaura
3 Hiko Rentai	3 reconnaissance chutai	Yokaichi
7 Hiko Rentai	2 light bomber chutai & 2 heavy bomber chutai	Hamamatsu
12 Hiko Rentai	3 fighter chutai	Kakogawa

2 HIKODAN (2 Air Brigade)

6 Hiko Rentai	1 fighter chutai and 2 light bomber chutai	Pyongyang
9 Hiko Rentai	2 fighter chutai and 2 light bomber chutai	Hoelyong

3 HIKODAN (3 Air Brigade)

4 Hiko Rentai	2 fighter chutai and 2 reconnaissance chutai	Tachiari
5 Hiko Rentai	2 fighter chutai and 2 reconnaissance chutai	Tachikawa
8 Hiko Rentai	1 fighter chutai and 1 light bomber chutai	Pingtung, Formosa
14 Hiko Rentai	2 heavy bomber chutai	Chaii

KANTO GUN (Kanto Command) (MANCHURIA)

Hiko Shudan (Joint Air Group)

10 Hiko Rentai	3 light bomber chutai	Tsitsihar
11 Hiko Rentai	4 fighter chutai	Kharbin
12 Hiko Rentai	4 heavy bomber chutai	Kunchuling
15 Hiko Rentai	3 reconnaissance chutai	Changchun
16 Hiko Rentai	2 fighter chutai and 2 light bomber chutai	Mutanchiang

* *Hiko Rentai = 'Air Wing'*

4. IJAAF Order of Battle, 1937

1 HIKO SHUDAN (1 Joint Air Group) HOME AIR GROUP

1 Sentai (F)	Kagamigahara
2 Sentai (R)	Kagamigahara
3 Sentai (LB)	Yokaichi
4 Sentai (F)	Tachiari
7 Sentai (L & HB)	Hamamatsu
13 Sentai (F)	Kakogawa

2 HIKODAN (2 Air Group), KOREA

6 Sentai (F)	Pyongyang
9 Sentai (F)	Hoelyong
65 Sentai (LB)	Hamfung

4 HIKODAN (4 Air Group), FORMOSA

8 Sentai (F & LB)	Pingtung
14 Sentai (F)	Chaii

7 HIKODAN (7 Air Group)

12 Sentai (HB)	Kunchuling
15 Sentai (R)	Changchun

2 HIKO SHUDAN (2 Joint Air Group), MANCHURIA

8 HIKODAN (8 Air Group)

16 Sentai (LB)	Hailang
33 Sentai (F)	Kaochia
58 Sentai (HB)	Chiamus

9 HIKODAN (9 Air Group)

10 Sentai (R)	Tsitsihar
61 Sentai (HB)	Tsitsihar

11 HIKODAN (11 Air Group)

11 Sentai (F)	Harbin
24 Sentai (F)	Hailar

5. Deployment of the Kanto Command during the Nomonhan Incident in May 1939

2 HIKO SHUDAN (2 JOINT AIR BRIGADE)

7 HIKODAN (7 AIR BRIGADE)

11 Sentai	2 Type 95 fighter chutai	21
12 Sentai	2 Fiat heavy bomber chutai	12
15 Sentai	1 Type 98 Recce chutai	6

9 HIKODAN (9 AIR BRIGADE)

10 Sentai	1 Type 97 recce chutai	6
	1 Type 98 light bomber chutai	6
61 Sentai	2 Type 97 heavy bomber chutai	12

12 HIKODAN (12 AIR BRIGADE)

11 Sentai	4 Type 97 fighter chutai	37
24 Sentai	2 Type 97 fighter chutai	19

6. Deployment of the Kanto Command during the Nomonhan Incident in June 1939

2 HIKO SHUDAN (2 JOINT AIR BRIGADE)

2 HIKODAN (2 AIR BRIGADE)

9 Sentai	3 Type 95 fighter chutai	30
16 Sentai	3 Type 97 light bomber chutai	16
29 Sentai	1 Type 97 / 98 recce chutai	4
65 Sentai	2 Type 98 light bomber chutai	16

9 HIKODAN (9 AIR BRIGADE)

10 Sentai	1 Type 97 recce chutai	4
	1 Type 98 light bomber chutai	6
31 Sentai	2 Type 97 light bomber chutai	13
33 Sentai	3 Type 95 fighter chutai	23
45 Sentai	3 Type 98 light bomber chutai	21
61 Sentai	2 Type 97 heavy bomber chutai	12

12 HIKODAN (12 AIR BRIGADE)

1 Sentai	3 Type 97 fighter chutai	21
59 Sentai	2 Type 97 fighter chutai	23
64 Sentai	3 Type 97 fighter chutai	15

PROVISIONAL AIR BRIGADE

11 Sentai	3 Type 97 fighter chutai	23
24 Sentai	3 Type 97 fighter chutai	23
15 Sentai	1 Type 97 /98 recce chutai	4

7. IJAAF Order of Battle, December 1941

3 HIKOSHIDAN (3 AIR DIVISION) INDO CHINA, SUPPORTING 15TH AND 25TH ARMIES

3 HIKODAN

27 Sentai	23 Sonia	Konpong Trach
59 Sentai	24 Oscar	Konpong Trach
75 Sentai	25 Lily	Konpong Trach
90 Sentai	30 Lily and Ann	Konpong Trach

7 HIKODAN

12 Sentai	21 Sally	Sien Reap
60 Sentai	39 Sally	Kurakar
64 Sentai	35 Oscar and 6 Nate	Duong Dong
98 Sentai	42 Sally	Kurakar

10 HIKODAN

31 Sentai	24 Ki-30	Sien Reap
62 Sentai	22 Sally	Kurakar
77 Sentai	27 Nate	Duong Dong
70 Dokuritsu Chutai	8 Babs	Kurakar

12 HIKODAN

1 Sentai	42 Nate	Konpong Trach
11 Sentai	39 Nate	Kukan
81 Sentai	9 Babs and 7 Dinah	Phnom Pehn

15 DOKURITSU HIKOTAI

50 Dokuritsu Chutai	5 Babs / Dinah	Konpong Trach
51 Dokuritsu Chutai	6 Babs / Dinah	Phnom Phen

83 DOKURITSU HIKOTAI

71 Dokuritsu Chutai	10 Sonia
73 Dokuritsu Chutai	9 Sonia
89 Dokuritsu Chutai	12 Ida
12 Transport Chutai	

SOUTHERN ARMY DIRECT COMMAND

21 DOKURITSU HIKOTAI

84 Dokuritsu Chutai	9 Nate
82 Dokuritsu Chutai	12 Lily
47 Dokuritsu Chutai	9 Tojo
1 Transport Chutai	
2 Transport Chutai	
13 Special Transport Chutai	
15 Special Transport Chutai	

7. (cont'd) 5 HIKOSHIDAN (5 AIR DIVISION) FORMOSA

4 HIKODAN

8 Sentai	27 Lily, 9 Babs, 2 Dinah	Chiatung
14 Sentai	18 Sally	Chiai
16 Sentai	27 Ann	Chiatung
24 Sentai	36 Nate	Chaochou
50 Sentai	36 Nate	Hengchun

10 DOKURITSU HIKOTAI

52 Dokuritsu Chutai	13 Babs	Pintung
74 Dokuritsu Chutai	10 Ida	Pintung
76 Dokuritsu Chutai	9 Babs and 2 Dinah	Pintung

8. IJAAF Order of Battle against Hong Kong, December 1941

(As part of 23 Army Group in South China)

45 Sentai	
1 reconnaissance chutai	
1 fighter chutai	
Detachment from 5 Hikoshidan (5 Air Division)	16 bombers

9. Order of Battle of 3 Kokugun (3 Air Army) and Japanese Naval Air Forces supporting 25 Army during the Malayan Operation, December 1941 to February 1942

3 Hikodan (3 Air Brigade)	1 fighter and 3 bomber sentai
7 Hikodan (7 Air Brigade)	1 fighter and 3 bomber sentai
12 Hikodan (12 Air Brigade)	2 fighter sentai
15 Dokuritsu Sentai	2 reconnaissance chutai
81 Sentai	1 reconnaissance chutai
Maximum operational strength	146 fighters (including 56 Zeros) 172 bombers 36 reconnaissance aircraft

Total 354 aircraft

10. Order of Battle of the Japanese 5 Air Division, March 1942

H.Q. RANGOON

4 Hikodan		Toungoo
50 Sentai	Oscar	Toungoo
8 Sentai	Dinah / Lily	Toungoo
7 Hikodan		Bangkok
64 Sentai	Nate / Oscar	Rangoon
12 Sentai	Sally	Bangkok
98 Sentai	Sally	Nakawn
10 Hikodan		Lampang
77 Sentai	Nate	Lampang
31 Sentai	ANN	Phitsanulok
12 Hikodan		Hlegu
1 Sentai	Nate	Hlegu
11 Sentai	Nate	Hlegu
15 Dokuritsu		Rangoon
27 Sentai	Ann/ Mary / Sonia	Toungoo
TOTAL	288 Fighters and approximately 126 Bombers / Recce	

11. Order of Battle of the Japanese 3 Air Army, July 1942

H.Q. SINGAPORE

BURMA

5 Hikodan	
4 Hikodan	
50 Sentai	Nate
8 Sentai	Dinah / Lily
14 Sentai	Sally
7 Hikodan	
64 Sentai	Nate / Oscar
12 Sentai	Sally
98 Sentai	Sally
12 Hikodan	
1 Sentai	Oscar
11 Sentai	Oscar
81 Sentai	Babs / Dinah

NETHERLANDS EAST INDIES

3 Hikodan	
59 Sentai	Oscar
75 Sentai	Lily
21 Ind Chutai	
83 Ind Chutai	Mary / Sonia

12. Area of Operations of the Japanese Army Air Force in August 1943

Manchuria	Kwangtung Army	2 and 4 Hikoshidan
China	China Expeditionary Army	3 Hikoshidan
North East Front	Northern Army (including Kurile Isles, Sakhalin and Hokkaido)	1 Hikoshidan
South East Pacific	4 Kokugun	6 and 7 Hikoshidan
Southern Operations	Burma Area Army	5 Hikoshidan

13. IJAAF in Burma, November 1943

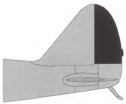
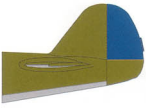
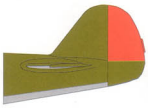
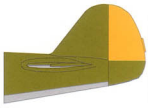
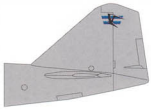
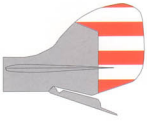
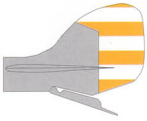
HQ 5 Hikodan	**Type**		**Approx**
33 Sentai	Oscar		20
204 Sentai	Oscar		20
4 Hikodan			
50 Sentai	Oscar		27
8 Sentai	Dinah / Lily		27
34 Sentai	Lily		20
7 Hikodan			
64 Sentai	Oscar		31
12 Sentai	Sally		15
98 Sentai	Sally		15
81 Sentai	Dinah		15
21 Sentai	Nick		12
	TOTAL	=	201

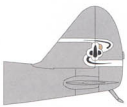
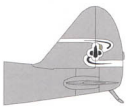
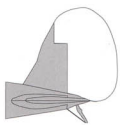
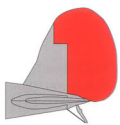
For the attack on Calcutta on 5th. December 1943, 5 Air Division was reinforced with nine IJNAF Type 1 bombers and 30 Zeros from 28 Air Flotilla.

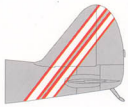
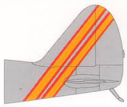
14. IJAAF Operational Aircraft

Kitai Number	Type	Allied Code
Ki-1	93 heavy bomber	not issued
Ki-2	93 light bomber (twin)	Louise
Ki-3	93 light bomber (single)	not issued
Ki-9	95-1 intermediate trainer	Spruce
Ki-10	95 fighter	Perry
Ki-15	97 recce	Babs
Ki-17	93-3 primary trainer	Cedar
Ki-20	97 super-heavy bomber	not issued
Ki-21	97 heavy bomber	Sally
Ki-27	97 fighter	Nate
Ki-30	97 light bomber	Ann
Ki-32	98 light bomber	Mary
Ki-34	97 transport	Thora
Ki-36	98 recce	Ida
Ki-43	1 fighter	Oscar
Ki-44	2 fighter	Tojo
Ki-45	2 fighter (twin)	Nick
Ki-46	100 recce and fighter	Dinah
Ki-48	99 light bomber	Lily
Ki-49	100 heavy bomber	Helen
Ki-51	99 assault	Sonia
Ki-54	1 trainer and transport	Hickory
Ki-55	99 advanced trainer	Ida
Ki-56	1 freight transport	Thalia
Ki-57	100 transport	Topsy
Ki-59	1 transport	Theresa
Ki-61	3 fighter	Tony
Ki-67	4 heavy bomber	Peggy
Ki-76	3 command liaison	Stella
Ki-79	2 advanced trainer	not issued
Ki-84	4 fighter	Frank
Ki-86	4 primary trainer	Cypress
Ki-100	5 fighter	not issued
Ki-102	4 assault	Randy

SENTAI MARKINGS

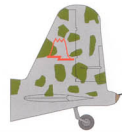
SENTAI, TYPE AND PERIOD	SENTAI HOMBU	1 CHUTAI	2 CHUTAI	3 CHUTAI
1 Nate (1938-42)				
	The stripes were probably colour-coded to chutai			
		 alternative		
1 Oscar (1942)				
1 Oscar (1943-45)				
		The chutai colours were often overpainted with white bands, denoting the respective shotai		
1 Frank (1944-45)				
		The chutai colours were often overpainted with white bands, denoting the respective shotai		
2 Babs Dinah (1943-44)		The two stripes denote 2 Sentai. There were no chutai distinctions		
3 Nakajima 84 Nakajima 89 (1925-38)				No 3 Chutai

3 Mary (1938-42)				
3 Lily (1942-44)				
3 Randy (1944-45)				
4 Kawasaki 92 Ki-4 Perry (1925-38)				No 3 Chutai
4 Nate (1938-42)				
4 Nick (1945)				
5 Kawasaki 88 Nakajima 91 (1924-35)				
5 Nakajima 91 (1936-38)	N.B. 4 Chutai, not sentai hombu			

5 Nate (1938-42)				
5 Nick (1942-43)				
5 Nick (1943-44)		All chutai carried the same marking, but each machine was named after a famous mountain, which was generally painted on the rudder.		
5 Nick (1944-45)		All chutai carried the same marking, with no chutai distinctions. The unit marking was changed as a morale booster and was carried by 1 Hikotai machines until the end of the war.		
5 Ki-100 (1945)		This unit marking was carried by 2 Hikotai machines. An individual aircraft number was carried on the rudder.		
6 Mary (1938-41)		All chutai carried the same marking, with no chutai distinctions.		
6 Sonia Mary (1941-44)				
6 Sonia (1944)				

6 Sonia (1944-45)

7 Sally (1938-44)



7 Peggy (1944-45)

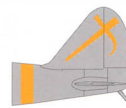
Machines carried either Mount Fuji and River Fuji, or a white 7 followed by the aircraft number

8 Mixed sentai of Dinah and Lily (1938-43)

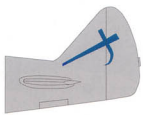
N.B. 4 Chutai

Varying numbers of white, red or blue bands were carried at the top of the fin, signifying the aircraft within the shotai

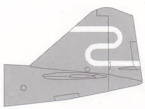
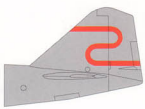
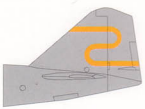
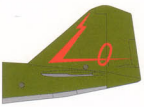
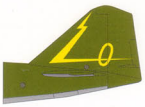
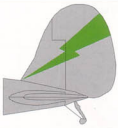
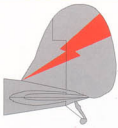
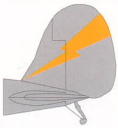
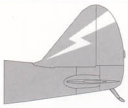
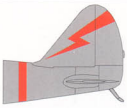
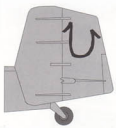
9 Nate (1938-42)

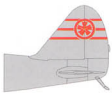


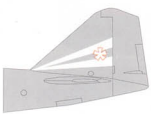
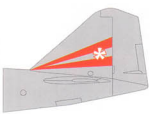
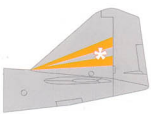
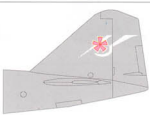
9 Tojo (1942-45)



10 Ann Babs Mary (1938-41)

10 Dinah (1943)				
10 Dinah (1944-45)				
11 Nakajima 89 Perry (1920-38)	 N.B. 4 Chutai			
11 Nate (1942)	N.B. 4 Chutai			
11 Oscar (1942-45)				
11 Frank (1944-45)				
12 Ki-1 (1934-38)			The Chutai were identified by kana symbols, with ten characters being issued to each chutai — here 'hi'	
12 Ruth (1938-39)			The Chutai were identified by kana symbols, with ten characters being issued to each chutai — here 'a'	

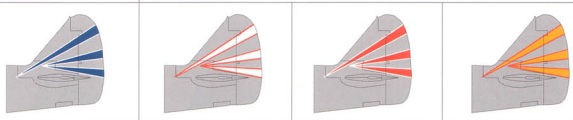
12 Sally (1940-43)				
13 Perry (1938)				
13 Nate (1941-42)				
13 Nick (1942-43)				
13 Nick (1943-44)		No chutai distinctions Some aircraft carried tail identification numbers		
14 Sally (1938-44)				
14 Peggy (1944-45)				
15 Ki-4 (1935-38)				No 3 Chutai

15 Ki-4 (1938)				
15 Babs Ida Ki-79 (1938-40)				
15 Ann Babs (1940-41)				
15 Dinah (1941-45)				
15 Dinah (1945)	 alternative			
16 Ki-3 (1935-38)				
16 Ann Lily (1939-42)				
16 Nick (1942-44)				

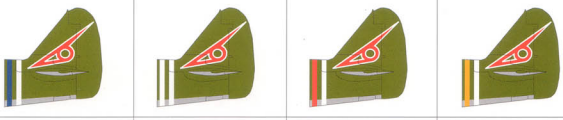
16 Peggy (1944-45)

17 Tony Ki-100 (1944-45)

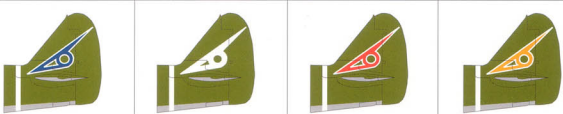
18 Tony Ki-100 Nate (few) (1943-44)



19 Tony Ki-100 (1944)



19 Tony (1944-45)



20 Oscar (1943-45)

1 Chutai - white spinner
2 Chutai - red spinner
3 Chutai - yellow spinner

N.B. photographic evidence confirming the blue uppersurfaces has proven elusive.

20 Tony (1945)

21 Nick (1942-45)

22 Tojo (1943)

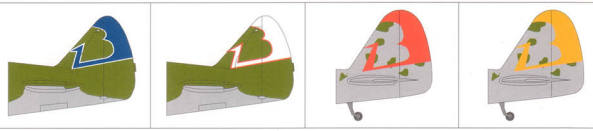
22 Frank (1944-45)

There were many variations of the common scheme. Chutai were identified by both spinner and river colour.

H.Q. red
1 Chutai white
2 Chutai blue
3 Chutai yellow

By mid 1945, no sentai markings were carried, with the aircraft being identified by fin numbers

23 Oscar Tojo (1944-45)



Mixed sentai, with Tojo in HQ and 1 Chutai and with Oscar in 2 and 3 Chutai

24 Nate (1938-42)

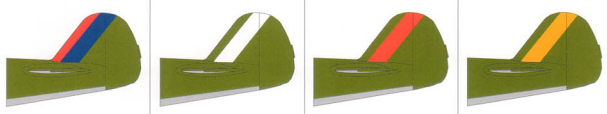
24 Oscar (1942-45)

25 Oscar (1942-43)

No 3 Chutai

25 Oscar (1943-45)

25 Frank and Oscar (mixed) (1945)



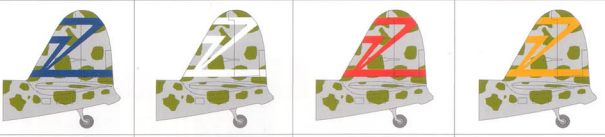
26 Nate Oscar Sally Sonia (1942-45)

26 Nate
Oscar
Sally
Sonia
(1942-45)

A combination of this device and the preceding version were reportedly carried.

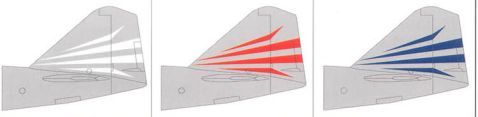
27 Ann
Mary
Sonia
(1938-44)

27 Nick
(1944-45)



28 Ki-4
Ann
Babs
Sonia
(1939-40)

28 Dinah
(1944-45)



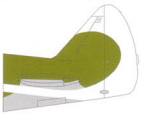
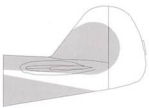
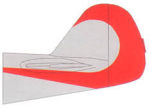
28 Dinah
Randy
(1944-45)

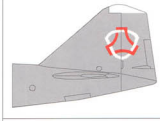
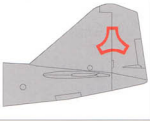
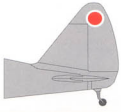
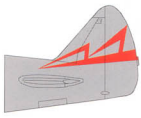
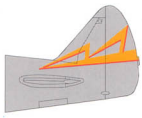
Alternative markings

29 Babs
Ida
(1939-40)

No 3 Chutai

The sentai device markings were in gold paint

29 Ida (1940-41)				No 3 Chutai The sentai device markings were in gold paint
29 Ann Ida (1941)				No 3 Chutai
29 Tojo (1944)				
	Design not confirmed			
29 Frank (1944-45)				
	Design not confirmed			
31 Ann (1938-43)				
31 Oscar (1943-45)				
32 Ann (1939-42)				
33 Nate Oscar Perry Tojo (few) (1942-45)				

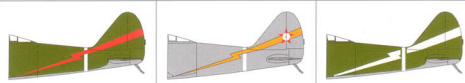
34 Lily (1942-44)				
38 Dinah (1943-45)				
		The chutai colours on the fin were repeated on the aircraft's nose		
44 Babs Ida Sonia (1939-41)				
44 Sonia (1942)				
45 Mary (1938-41)				
45 Lily (1941-44)				
45 Nick Randy (1944-45)				
47 Tojo (1943-44)				

47 Frank (1945)

48 Nate Oscar (1943-45)

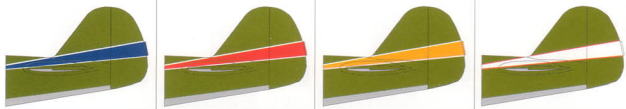
This unit apparently painted its identifying device at whim, in red, white or yellow, but the colours did not reflect any chutai ownership

50 Nate (1940-42)

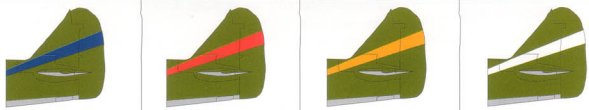


50 Oscar (1942-43)

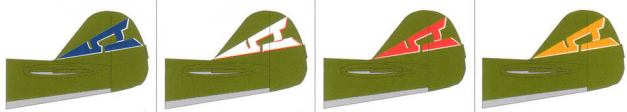
50 Frank (1944-45)



50 Tony (1945)



51 Frank (1944-45)

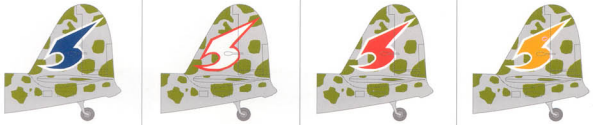


The front part of the spinner was also painted in the chutai colour

52 Frank (1944-45)

The front part of the spinner was also painted in the chutai colour

53 Nick (1944-45)



54 Nate (1941-43)

54 Oscar (1943-45)

55 Oscar (1944)

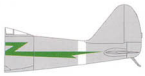
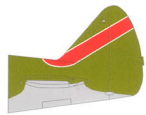
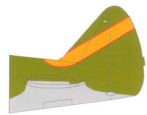
55 Tony (1944-45)

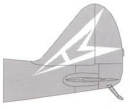
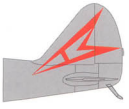
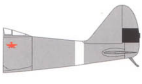
When this unit originally equipped with the Tony, the unit markings were confined to red spinners only

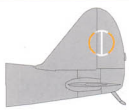
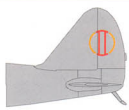
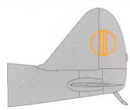
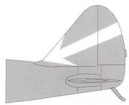
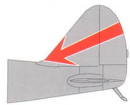
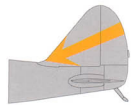
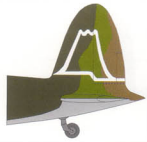
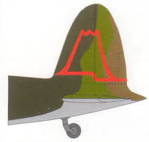
56 Tony Oscar (few) (1944-45)

58 Sally (1938-45)

variation

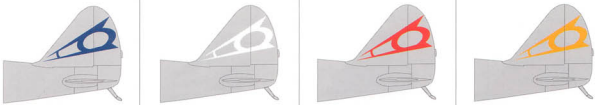
59 Nate (1938-41)				
59 Oscar (1941)				
59 Oscar (1942-43)				
59 Tojo (1944)				
59 Tojo Ki-100 (1945)				
60 Sally (1938-41)				
60 Sally (1941-43)				
60 Peggy (1943-45)				

61 Helen Sally (1938-44)				
61 Peggy (1945)				
62 Sally (1941-43)				
62 Helen (1943-45)				
62 Peggy (1945)				
63 Nate (1943)				
63 Oscar (1943-45)				
64 Nate (1938-39)				
		Red eagle abaft cockpit		

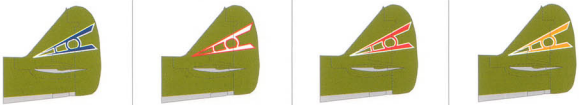
64 Nate (1940-41) 1st Chutai		 1st Aircraft 1st Shotai	 2nd Aircraft 2nd Shotai	 3rd Aircraft 3rd Shotai
		Red eagle abaft cockpit (abolished in early 1941) was Sentai emblem		
64 Nate (1941-42)				
64 Oscar (1942-45)				
64 Frank (mid 1945)				
65 Mary (1938-41)				No 3 Chutai
65 Mary (1941-42)				
66 Sonia (1942-44)				
66 Oscar and Sonia (1945)				

67 Sonia (1943-45)

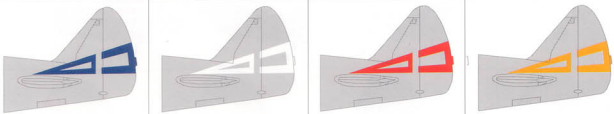
68 Nate (1942)



68 Tony (1943-44)



70 Tojo (1943-45)



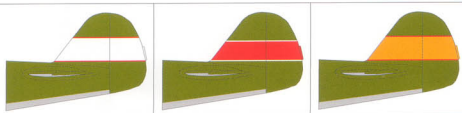
71 Oscar (1944-45)

No chutai distinctions — the Oscars were used for training purposes alongside the Franks

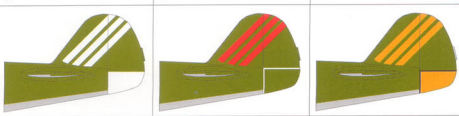
71 Frank (1944-45)

No chutai distinctions

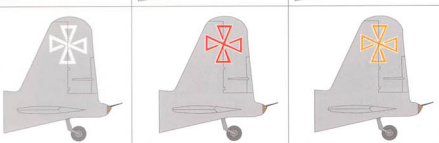
72 Frank (1944-45)



73 Frank (1944-45)



74 Sally (1940-43)

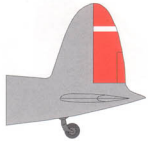


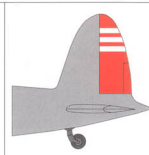
74 Helen
(1943-45)

74 Peggy
(1945)

1 Chutai - 100 to 199 block
2 Chutai - 200 to 299 block
3 Chutai - 300 to 399 block

75 Mary
(1938-41)



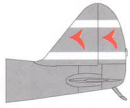
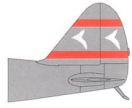


alternative

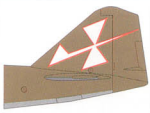
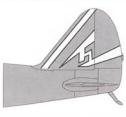
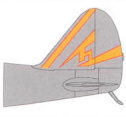
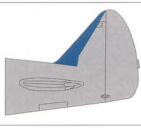
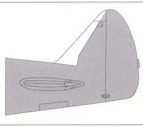
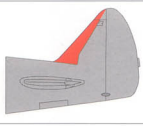
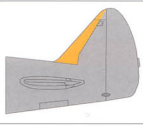
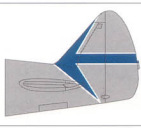
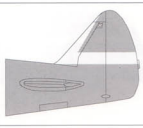
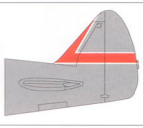
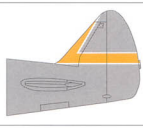
75 Lily
(1941-45)

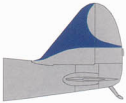
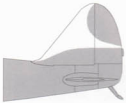
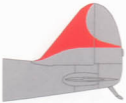
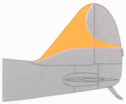
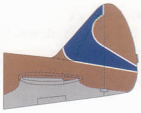
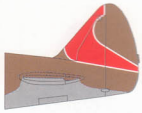
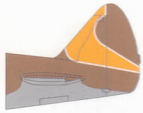
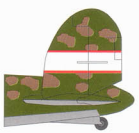
77 Perry
(1938-40)

77 Nate
(1940-42)

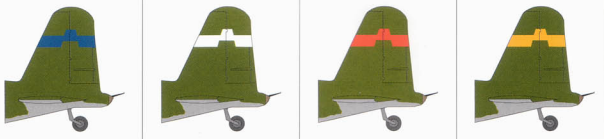



77 Oscar
(1942-44)

77 Oscar (1944)				
78 Tony (1943-44)				
81 Babs Dinah (1941-44)				
82 Dinah (1944-45)		No chutai distinctions		
83 Sonia (1941) (1944-45)				
85 Nate (1941-42)				
85 Tojo (1942-43)				
85 Tojo (1943-44)				
85 Frank (1944-45)				

87 Ann (1938)		No chutai distinctions		
87 Nate (1941)				
87 Tojo (1942-45)				
90 Ann (1938-41)				
		Stripes across the fin and rudder denoted the respective shotai		
90 Lily (1941-45)				
		Stripes across the fin and rudder denoted the respective shotai		
95 Helen (1942-44)				
98 Ruth (1938-39)				

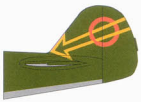
98 Sally (1939-45)



98 Peggy (1945)

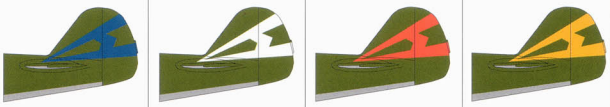
100-399 block 400-699 block 700-999 block
N.B. hyphen, followed by the last two numbers of the block

101 Frank Oscar (1944-45)



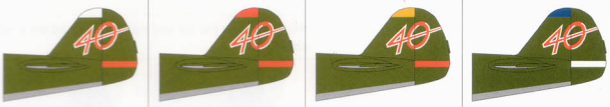
1 Chutai - white spinner
2 Chutai - red spinner
3 Chutai - yellow spinner

102 Frank Oscar (1945)



103 Frank Oscar (1944-45)

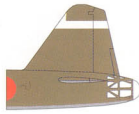
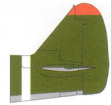
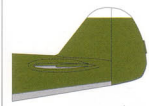
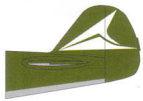
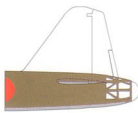
104 Frank Oscar Tojo (1944-45)



105 Tony (1944-45)

106 Dinah (1944-45)

At least one other machine had a diamond, rather than the ellipse as shown here. Its significance, if any, is unknown. One source contended that the inner green triangle should be red.

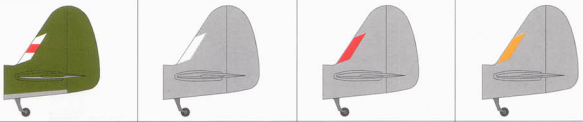
107 Peggy (1944-45)				
108 Hickory Sally Lily (1944)				
109 Sally Topsy (1944)				
110 Peggy (1944-45)		No unit markings were carried, but the individual aircraft number was painted on the rudder in white		
111 Frank Ki-100 (1945)		4 Chutai	 5 Chutai	
112 Oscar Frank Ki-100 (1945)		No chutai distinctions		
170 Peggy (1945)		No chutai distinctions		

200 Frank (1944-45)

N.B. This unit had six chutai. There were no chutai distinctions, but the individual aircraft number was painted in red, orange, or yellow.

204 Nate (1942)

204 Oscar (1942-45)



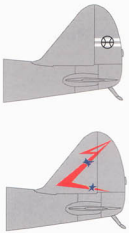
206 Ann Sonia Babs (1941-44)

208 Lily (1941-45)

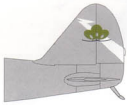
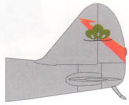
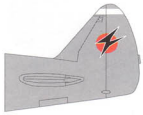
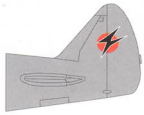
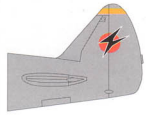
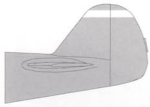
208 Lily (1945)

Generalised sentai markings. The individual chutai colours, if any were actually carried at the war's end, are unknown.

244 Nate (1942-43)

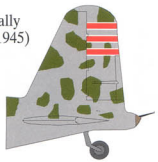


Generalised sentai markings.

244 Tony (1944-45)				
244 Ki-100 (1945)				
246 Nate (1942-43)				
246 Tojo (1943-45)			 few aircraft in 1945	
246 Frank Tojo (1945)				
248 Oscar (1942)	unconfirmed			
Teisin Sentai Thora Thalia Topsy (1941-44)				

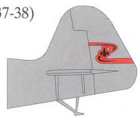
DOKURITSU CHUTAI
(Independent Companies)

3 Sally
(1945)



4 Ki-4
(1937)

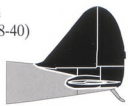
6 Ki-4
(1937-38)



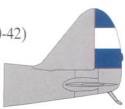
7 Ida

10 Perry
(1937-38)

10 Nate
(1938-40)



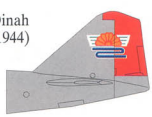
10 Nate
(1940-42)



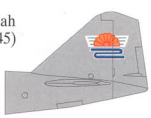
16 Babs
(1938)

16 Babs
(1938)

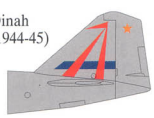
16 Dinah
(1944)



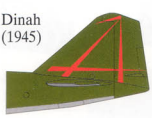
16 Dinah
(1945)



17 Dinah
(1944-45)



17 Dinah
(1945)

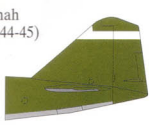


18 Babs
(1938-45)

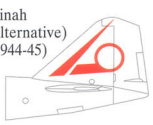
N.B. the chutai device was a tiger on the fuselage side

18 Dinah
(1944)

19 Dinah
(1944-45)



19 Dinah
(alternative)
(1944-45)



20 Topsy
(1943-45)

23 Tony
(1944-45)

24 Oscar
(1944-45)

24 Frank
(1945)

25 Nick
Tojo
(1944-45)

42 Ida
(1944-45)

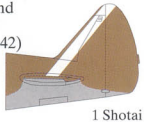
43 Ida
(1944-45)

45 Ida
Sonia
(1944-45)

47 Tojo
(1941-42)

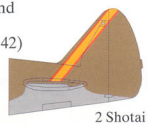
Ronin device on fuselage

47 Tojo and
Ki-60
(1941-42)



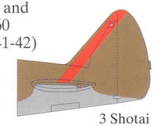
1 Shotai

47 Tojo and
Ki-60
(1941-42)



2 Shotai

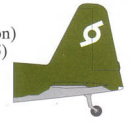
47 Tojo and
Ki-60
(1941-42)



3 Shotai

47 Ida
(1944-45)

47 Sonia
(variation)
(1944-45)

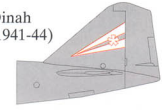


48 Ida
Sonia
(1944-45)

49 Sonia
(1944-45)

50 Babs
(1941-44)

50 Dinah
(1941-44)

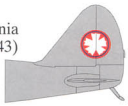


51 Babs
Dinah
(1941-42)

52 Sonia
(1941-43)

52 Sonia
(1943-45)

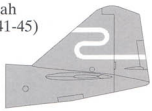
54 Nate
Ida Sonia
(1941-43)



55 Babs
Dinah
(1942-44)

66 Ida
(1941-45)

70 Dinah
(1941-45)



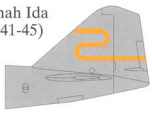
71 Sonia
(1941-43)

71 Oscar
(1944-45)

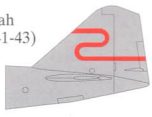
73 Sonia
(1941-42)

73 Sonia
(1942-45)

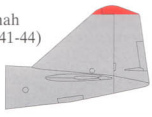
74 Dinah Ida
(1941-45)



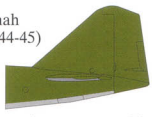
76 Dinah
(1941-43)



81 Dinah
(1941-44)



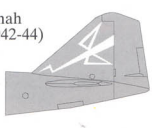
81 Dinah
(1944-45)



Pilot's name characters on rudder

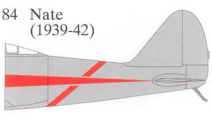
82 Ann
(1939-42)

82 Dinah
(1942-44)



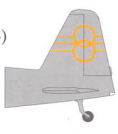
83 Mary
Sonia
(1939-44)

84 Nate
(1939-42)



87 Ann
(1941-44)

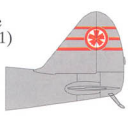
89 Sonia
(1941-44)



90 Sonia
(1943)

91 Sonia
(1942-44)

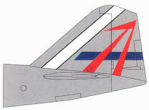
102 Nate
(1941)



51 Hikoshidan Shireibu Hikohan (Air Brigade) Helen, Hickory, Thora (1942-44)

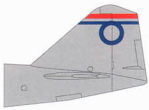
HIKODAN SHIREIBU TEISATSU CHUTAI (Direct Command Reconnaissance Companies)

17 Babs, Dinah Oscar (1942-43)



17 Babs, Dinah (1943-44)

18 Babs, Dinah (1943-44)



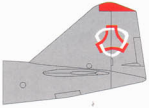
19 Babs, Dinah (1943-44)

DOKURITSU HIKOTAI (Independent Wings)

3 Sally (1944-45)

16 Dinah (1945)

17 Dinah (1945)



38 Dinah (1945)

YASEN HOJYU HIKOTAI (Auxiliary Battlefield Unit)

1 Dinah, Helen, Mary, Frank, Peggy, Tojo (1941-45)

KYOIKU HIKOSHIDAN
(Air Training Division)

51 Thora (1942-45)

HIKOSHIDAN HIKOTAI
(Instructional Air Units)

Akeno
(Student Company)

Akeno
(Instructor Company)

Hamamatsu
(1 Chutai)

Hamamatsu
(2 Chutai)

Hitachi
(1944-45)

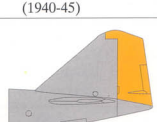
Hokota
(1940-45)

Koku Shikan Gakko
(Army Air Academy)
(1940-45)

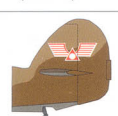
Kumagawa
(1940-45)

Mito

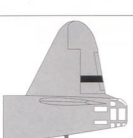
Niigata
(1943-45)



Shimoshizu
(1944)



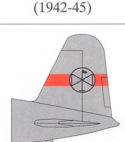
Tachikawa
(1942-45)



Tokorozawa
(1940-45)

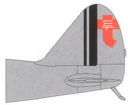
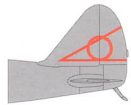
Tokooya Officers School
(1945)

Utsonomia
(1940-45)

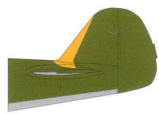
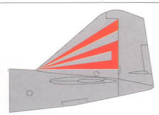
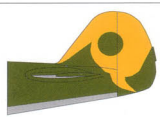
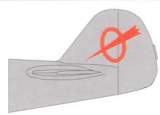
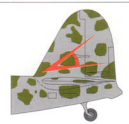


Utsonomia Army Air
Communications School
(1940-45)

KYOIKU HIKO RENTAI
(Training Units)

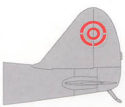
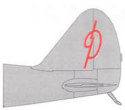
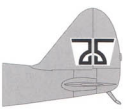
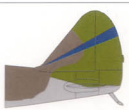
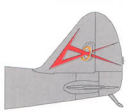
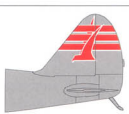
101 Nate (1941-43)		101 Nate (1944)	
104 Sonia (1943-44)		105 Sally (1942-44)	
107 Sonia (1941-44)		115 Dinah (1943)	

RENSEI HIKOTAI
(Fighter Operational Training Units)

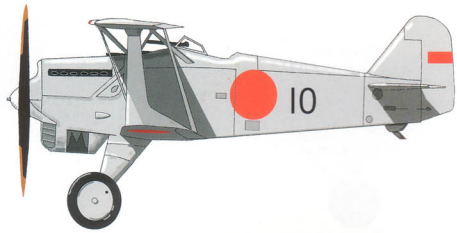
1 Oscar Frank (1944-45)		1 Oscar Frank (1944-45)	
N.B. these markings are occasionally referred to as those of 520 Temporary Sentai			
5 Nate Oscar Tony (1944-45)		6 Dinah (1944-45)	
8 Frank (1944-45)		10 Frank (1944-45)	
10 Frank (1945)		12 Hickory Nick (1944-45)	

17 Oscar (1944-45)			

KYOIKU HIKOTAI
(Fighter Training Units)

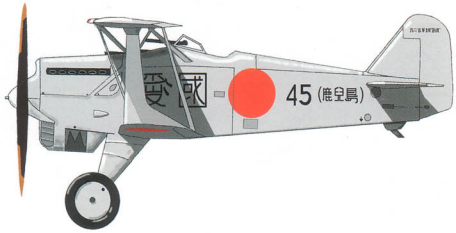
1 Nate (1944-45)		2 Hickory Ida Spruce (1944)	
8 Nate (1944-45)		14 Nate (1944-45)	
19 Nate Ki-79 (1944-45)		25 Nate Ki-79 (1944-45)	
26 Nate Ki-79 (1944-45)		29 Nate (1944-45)	
35 Nate (1944-45)		37 Tony (1944-45)	
39 Nate Oscar Ki-79 Tony (1944-45)		40 Nate (1944-45)	
44 Ki-79 (1944-45)		111 Nate (1944-45)	

1



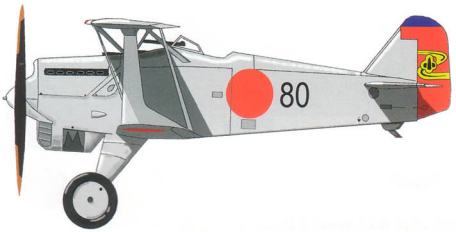
1: *Kawasaki KDA-5 Type 92 fighter of an unknown unit. The side number bore no relationship to the total production quantity of the aircraft type, since the IJAAF deliberately hid the true figures of the aircraft constructed. This type was operated by 4,5,6,8 and 9 Hiko Rentai.*

2



2: *Kawasaki KDA-5 Type 92 fighter of an unknown unit, with the characters at the fin top reading '92 FIGHTER'. The characters below the cockpit read 'Aikoku' meaning 'Love Country' i.e. 'Patriotism'. This expression appeared on several types of single-engined IJAAF aircraft before the war. Although all of the inscribed characters were neatly painted, the number 5 was poorly drawn. In the case of this aircraft, the number 45 indicated that it was the 45th gift machine and was from the citizens of Kagoshima.*

3

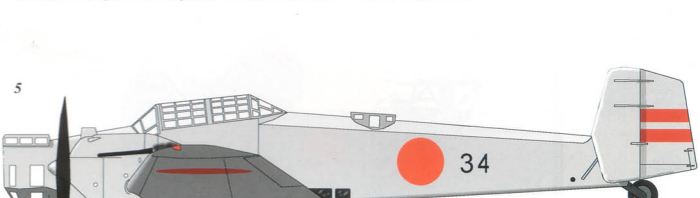


3: *Kawasaki KDA-5 Type 92 fighter of 4 Hiko Rentai at Tachiari, Japan in 1932. This unit metamorphosed into 4 Sentai and carried the same marking on Ki-4s, Nates and Nicks until 1945.*

4

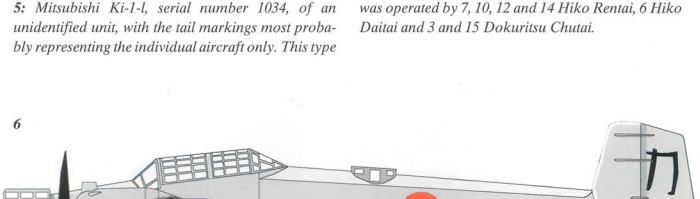
4: *Mitsubishi Type 92 Reconnaissance Aircraft of an unidentified unit, operational in an Army Co-operation role during the Sino-Japanese War in 1937. It was most probably from either 1, 3 or 7 Rentai, all of which belonged to the Hiko Shudan of the Provisional Air Command.*

5



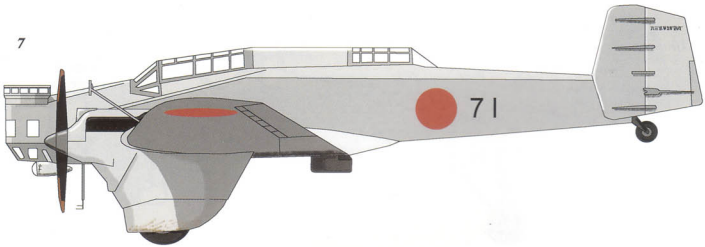
5: *Mitsubishi Ki-1-l, serial number 1034, of an unidentified unit, with the tail markings most probably representing the individual aircraft only. This type was operated by 7, 10, 12 and 14 Hiko Rentai, 6 Hiko Daitai and 3 and 15 Dokuritsu Chutai.*

6



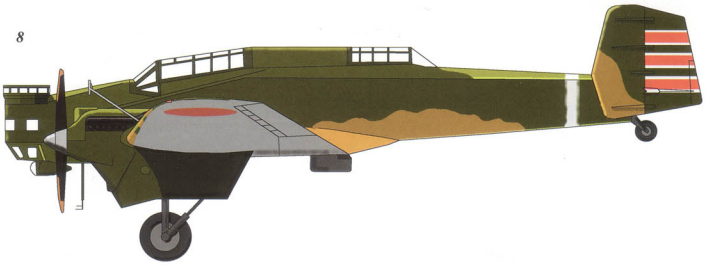
6: *Mitsubishi Ki-1-l, of 12 Hiko Rentai, 2 Daitai, at Chengteh, China. The individual identification character on the tail is 'Ka'.*

7



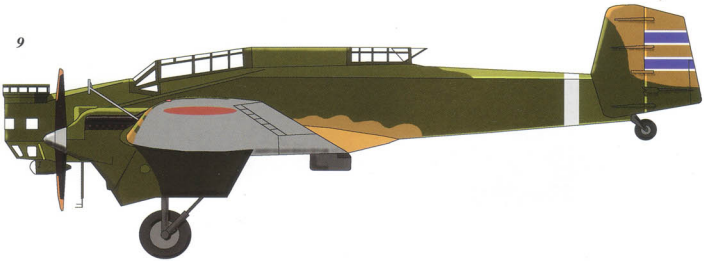
7: *Mitsubishi Ki-1-ll. This machine, serial number 1071, was the prototype for the Ki-1-ll variant and it later appeared with an experimental spherical glazed nose turret.*

8



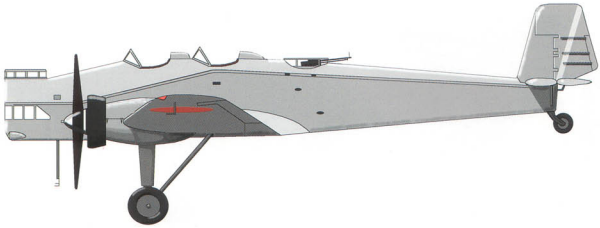
8: *Mitsubishi Ki-1-ll of an unidentified unit. These aircraft were found to be unsuitable for a war role at the start of the Sino-Japanese War, in July 1937, due to both being too slow and for having unreliable engines. At this stage, these aircraft were operated by 12 Hiko Rentai (Air Battalion) of Kanto Command Hikodan and with 6 Hiko Rentai and 3 Dokuritsu Chutai of the Hiko Shudan (Joint Air Group) of Provisional Air Command. The aircraft carried a combat band which had been partially oversprayed.*

9



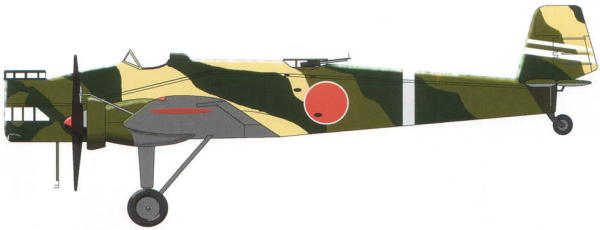
9: *Mitsubishi Ki-1-ll of an unidentified unit, stated to have still been operational at the time of the Nomonhan incident against the USSR in May 1939. The large white band indicated the command status of the crew. The rudder stripes were in the chutai colour.*

10



10: *Mitsubishi Ki-2-I 'Louise' of an unidentified unit, showing a typical aircraft identifier. Other individual aircraft markings within this unit took the form of horizontal, vertical or diagonal stripes, or crosses, either in red or white. These symbols were often repeated upon the inner faces of the rudders of aircraft with multiple tailplanes.*

11

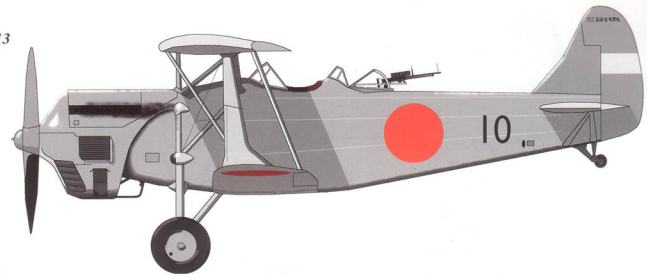


11: *Mitsubishi Ki-2-I 'Louise' of an unidentified unit. Since this machine was camouflaged for operational purposes, the assumption is that it was from either 5 or 9 Rentai, or from 14 Dokuritsu Chutai, all belonging to the Hiko Shudan of the Provisional Air Command. These were the active light bomber units at the beginning of the Sino-Japanese War, in July 1937 and their aircraft were both popular and effective.*

12

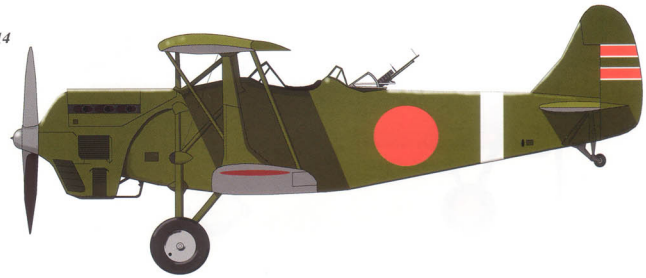
12: *Mitsubishi Ki-2-II 'Louise' of the Koku Shikan Gakko (Army Air Academy) at Irumagawa, Japan, in the late 1930s. The enclosed nose turret was specifically designed for cold weather operations. Although this type was allocated the reporting name 'Louise', it was never encountered in combat by Allied aircraft, since it was demonstrably obsolete.*

13



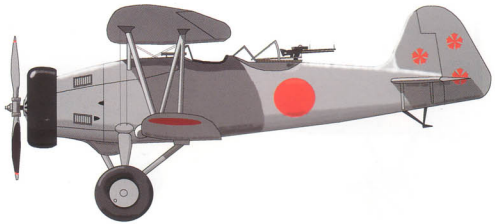
13: *Kawasaki Ki-3 of an unidentified unit, carrying an intra-unit identification marking. The characters on the rudder meant '93 Light Bomber'. The powerplant of this type was temperamental and, although they were actually versatile aircraft, they were the last IJAAF biplane bomber. They were operated by 6, 7, 8, 9 and 16 Hiko Rentai and were ultimately replaced in service by the Ki-30 'Ann' and Ki-32 'Mary'.*

14



14: *Kawasaki Ki-3 of an unidentified unit. When aircraft were camouflaged, the side numbers and rudder characters were over-painted. These machines were operational in both China and Manchuria in 1937, with 9 Rentai and 14 Dokuritsu Chutai of the Provisional Air Command.*

15



15: *Nakajima Ki-4 of 15 Sentai in 1938. This type was operational from the start until the middle of the Sino-Japanese War, when the operational machines were camouflaged,but were typically unmarked. This type was very popular, but suffered a high combat attrition rate.*

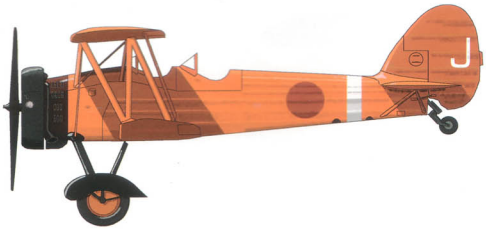
16

16: *Tachikawa Ki-9 'Spruce' of Utsunomia Hikoshidan Hikotai (Utsunomai Instructor Air Division) at Utsunomia, Japan. These aircraft were known as 'Akatombo' within the IJAAF, translating as 'Red Dragonflies'. Some of this unit's machines carried a large inverted red V on the upper wing.*

17

17: *Tachikawa Ki-9 'Spruce' of Kumagawa Hikoshidan Hikotai (Kumagawa Instructor Air Division) at Kumagawa, Japan. Some of the machines from this unit wore a black number code and/or white striping above the unit identifier.*

18



18: *Tachikawa Ki-9 'Spruce' of Niigata Hikoshidan Hikotai (Niigata Instructor Air Division), at Niigata, Japan, in September 1945, immediately prior to demolition. The unit device was based upon the first kana character of 'Niigata', i.e. 'Ni' which are the two black horizontal stripes within a circle.*

19

19: *Tachikawa Ki-9 'Spruce' of 21 Hikoshidan Shireibu Hikodan (21 Air Brigade) at Kikuchi, Japan, in October 1945. This was only one of many Spruce trainers that were loaded with a full 55 gallon fuel drum in the rear cockpit. They were intended to be expended as special attack aircraft, in the event of landings on the Japanese mainland. The green uppersurfaces of this aircraft had eroded and the original red-orange coat showed through in patches. Although the side numbers were crudely painted, a considerable amount of care had been taken with all of the rudder markings.*

20

20: *Kawasaki Ki-10 'Perry' of 77 Sentai, Sentai Hombu. The tail marking represented the two 'sevens' of the sentai number. However, in common with many stylised IJAAF markings, the significance of the device was more apparent from one side (in this case, the starboard side) rather than from the other side. This sentai retained the same unit identifier until 1944.*

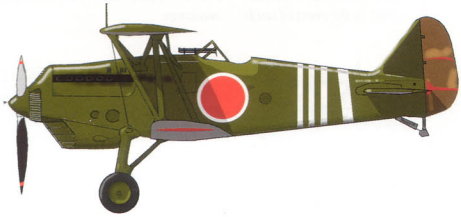
21

21: *Kawasaki Ki-10 'Perry' of 2 Hiko Daitai, 1 Chutai, in North China in 1938 and fitted with low-pressure tyres. Although the pilot, Lt. Kawahara, had achieved 9 victories over Chinese Nationalist aircraft, no kill markings were carried, since IJAAF policy at that time was to award victories to the aircraft involved in the combat, rather than to the pilot. The Kana character on the rudder reads 'Ha'.*

22

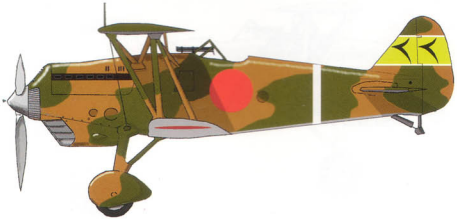
22: *Kawasaki Ki-10 'Perry' of 2 Sentai, 1 Chutai, in Manchuria, in 1938-39. There is an exception to every rule and this aircraft carried all of the victories (to date) of its pilot, Captain Takeo Kato. Kato flew several other Perrys within this unit, one of which had wheel spats with yellow flashes, whilst another bore a red fuselage band, red spat flashes and nine assorted red or white victory symbols below the red hawk.*

23



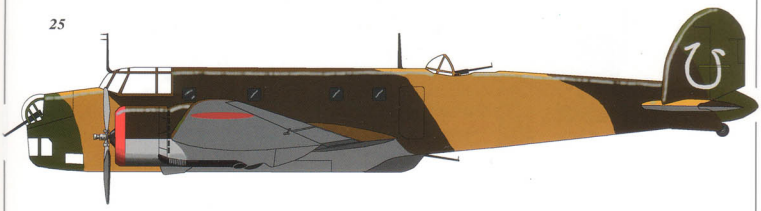
23: *Kawasaki Ki-10 'Perry' of 1 Sentai, during the Nomonhan incident against the USSR in May 1939 and before the application of sentai markings which, in the case of this sentai, took the form of coloured rudders. The combat band had been applied parallel to the ground line, whilst the plane identifier bands (aircraft number 3 of the shotai) were crudely painted parallel to the line of flight. The fuselage hinomaru was applied in a target-like manner immediately below the cockpit, although a similar practice had been abandoned by the Royal Flying Corps as early as 1917, for obvious reasons. Most of the aircraft in this unit carried larger areas of brown camouflage than this machine and they all appeared to carry characters upon their rudders. The backs of the propeller blades were typically painted dark brown.*

24



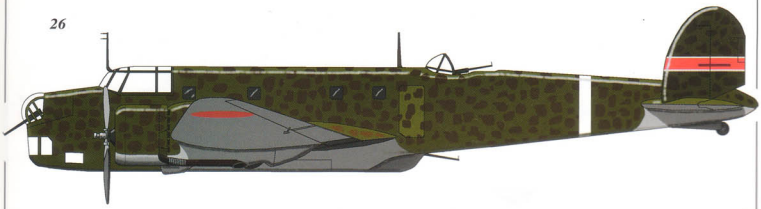
24: *Kawasaki Ki-10 'Perry' of 77 Sentai, 3 Chutai. Again, the fuselage hinomaru has been applied immediately below the cockpit. Hinomaru were generally not carried on the fuselage sides of IJAAF aircraft from 1938 to 1942.*

25



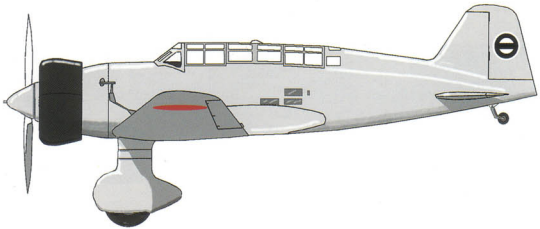
25: *Fiat Army Type I Heavy Bomber 'Ruth' (Fiat B.R.20) of 12 Sentai, 1 Chutai, in China in 1938-39. This unit marked each of its aircraft with an individual Kana character (here 'hi'). Each of the three chutai had ten characters for use and this perpetuated their earlier use of characters as a general unit designator on their previous equipment, the Mitsubishi Ki-1. The Fiats were purchased to compensate for the operational deficiencies of the Ki-1. The first 75 aircraft to be delivered were painted in the standard Italian colours of Verde Mimetico (green), Giallo Mimetico (ochre) and Bruno Mimetico (brown), with aluminium undersides.*

26



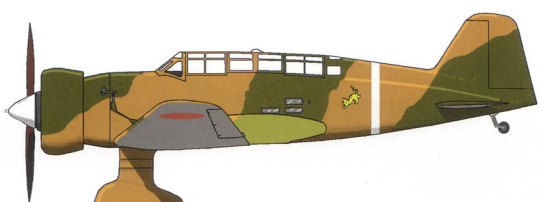
26: *Fiat Army Type I Heavy Bomber 'Ruth' (Fiat B.R.20) of 98 Sentai, 2 Chutai, in China in 1938-39. The 'Type I' referred to the Italian source of the machines. A second batch of ten aircraft were delivered to the IJAAF in an overall finish of Verde Oliva Scura (dark olive green), with a mottle of Bruno Mimetico (brown) and with, most probably, aluminium undersides.*

27



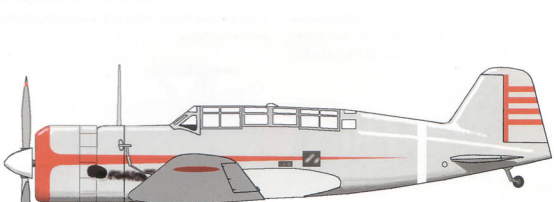
27: *Mitsubishi Ki-15-I 'Babs' of the Kumagawa Hikoshidan Hikotai (Kumagawa Instructor Air Division), at Kumagawa, Japan. This machine was finished in light grey overall, apart from the black cowling, which was so painted to prevent oil leaks from being visible.*

28



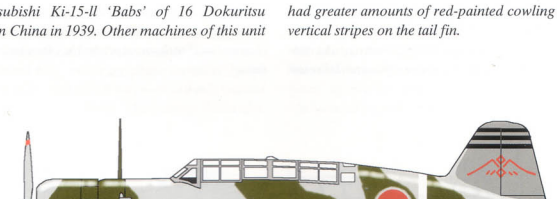
28: *Mitsubishi Ki-15-I 'Babs' of 18 Dokuritsu Chutai, in China in 1939, showing their 'kitten' fuselage marking.*

29



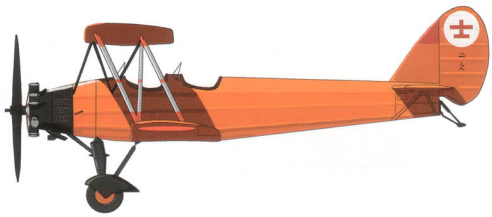
29: *Mitsubishi Ki-15-II 'Babs' of 16 Dokuritsu Chutai, in China in 1939. Other machines of this unit had greater amounts of red-painted cowling and / or vertical stripes on the tail fin.*

30

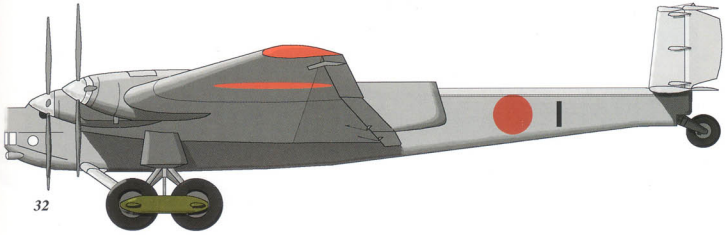


30: *Mitsubishi Ki-15-II 'Babs' of 8 Sentai, 1 Chutai, in Moulmein, Burma, in February 1942. After an attack by a Hurricane of 28 Squadron RAF, which wounded both crew, this machine was forced down, in a relatively riddled condition. This unit was known as 'Octopus 8' or 'Flying 8' to the unit members, by virtue of the tail design.*

31



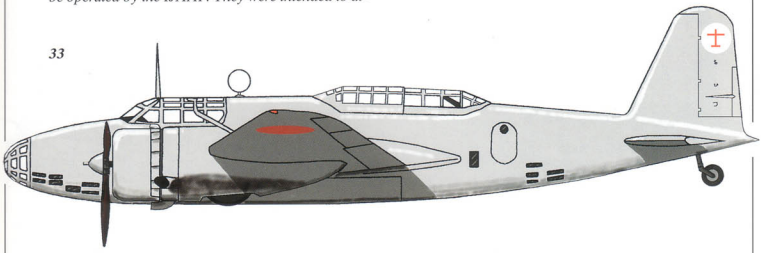
31: *Tachikawa Ki-17 'Cedar' of Koku Shikan Gakko (Army Air Academy) at Irumagawa, Japan. This type was also used by the Kumagawa, Mito, Tachiari and Utsonomiya Hikoshidan Hikotai (Instructor Air Divisions).*



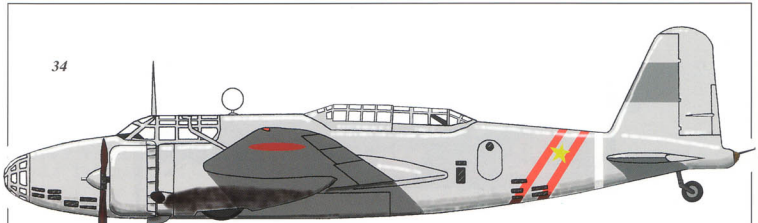
32

32: *Mitsubishi Ki-20 Super-heavy bomber of 7 Sentai, 2 Chutai, at Tachikawa, Japan, in 1940. This machine (black 1) was one of six licence-built versions of the Junkers G.38 passenger aircraft, with the addition of six gun positions and a 5000kg external bomb capacity. These machines were by far the largest ever to be operated by the IJAAF. They were intended to attack the forts at the entrance to Manila Bay in the Philippines and for deep penetration missions into Siberia. Their existence within the IJAAF was a closely-kept secret and they were only given a Kitai number (which was consequently out of sequence) when they were ultimately revealed in 1940.*

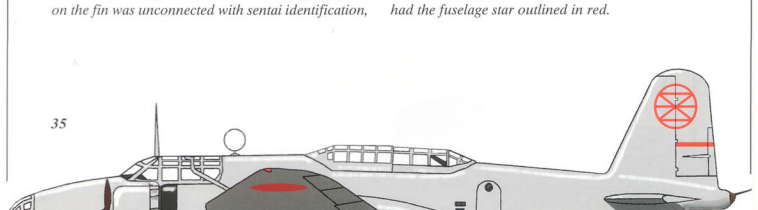
33



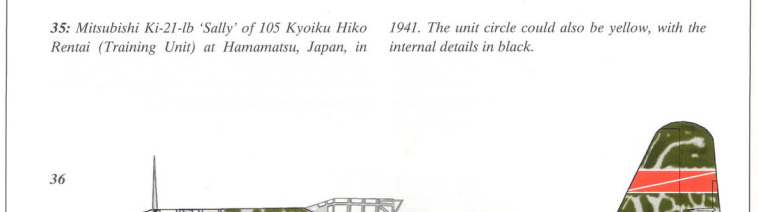
33: *Mitsubishi Ki-21-la 'Sally' of the Koku Shikan Gakko (Army Air Academy), at Irumagawa, Japan. This early version lacked the tail gun carried by all other models. It also carried small identification characters on the rudder.*



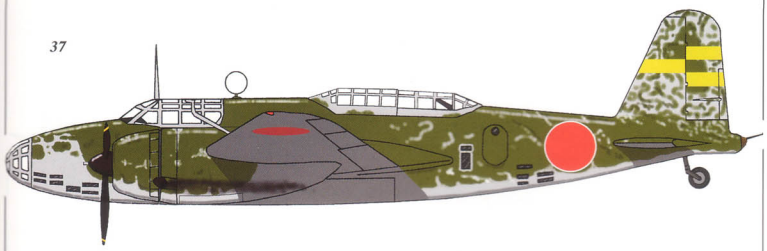
34: *Mitsubishi Ki-21-lb 'Sally' of 60 Sentai, 2 Chutai, operating over China. The dark grey panel on the fin was unconnected with sentai identification, being either a repair or an over-painted unit marking. Other similarly marked aircraft within this chutai had the fuselage star outlined in red.*



35: *Mitsubishi Ki-21-lb 'Sally' of 105 Kyoiku Hiko Rentai (Training Unit) at Hamamatsu, Japan, in 1941. The unit circle could also be yellow, with the internal details in black.*

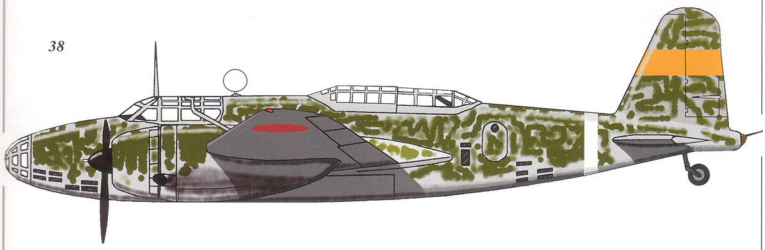


36: *Mitsubishi Ki-21-lla 'Sally' of 60 Sentai, 2 Chutai, involved in the assault on Singapore in mid January 1942. The green overspray had been applied in the field. The white diagonal stripe across the red bar was a relatively common feature, in much the same manner as on the following example from the Hamamatsu Hikoshidan Hikotai.*



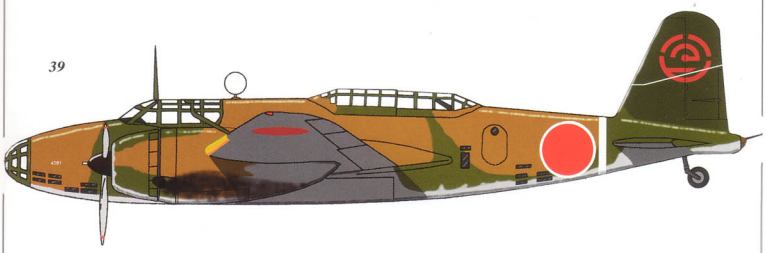
37

***37:** Mitsubishi Ki-21-IIa 'Sally' of 12 Sentai, 3 Chutai, at Bangkok in March 1942.*



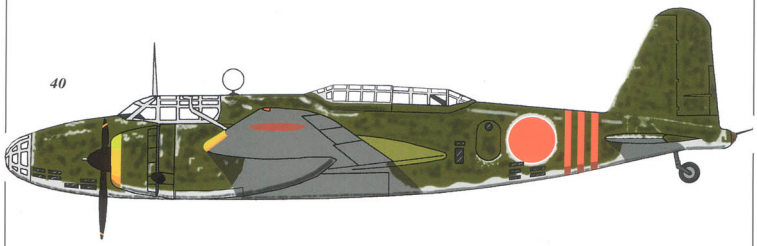
38

***38:** Mitsubishi Ki-21-IIa 'Sally' of 60 Sentai, 3 Chutai, based at the newly captured Clark Field, Philippines, in late March 1942, having transferred from Saigon. This sentai then operated against the besieged American and Filipino forces on Corregidor Island and Bataan.*



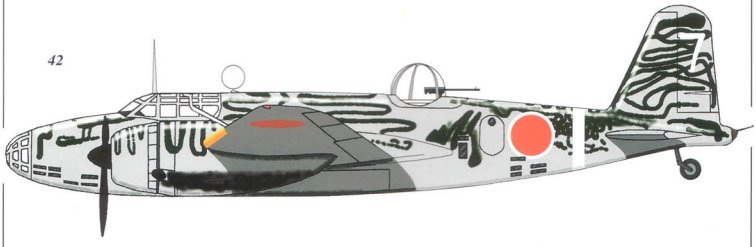
39

***39:** Mitsubishi Ki-21-IIa 'Sally' of the Hamamatsu Hikoshidan Hikotai (Hamamatsu Instructor Air Division). The unit design involved three characters: Ha, Ma, Hi. This machine carried 4381 in white on the nose. The white stripe defacing the unit marking was a common feature on the Sallys of this unit, which had been established as a heavy bomber training organisation in 1938.*

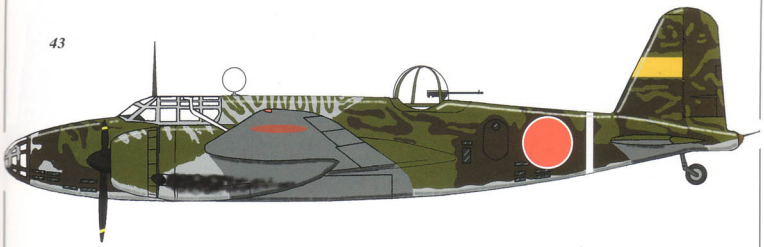


40: *Mitsubishi Ki-21-lla 'Sally' of an unidentified Sentai. This machine was painted in two shades of green in the field, with the canopy framing remaining uncovered. The green was applied some distance away from the fuselage hinomaru, so producing a typical halo effect in conjunction with the white hinomaru outline.*

41: *Mitsubishi Ki-21-lla 'Sally' of 81 Sentai, 1 Chutai, at Lakunai, New Britain, in 1943. This machine was partially covered by camouflage netting, particularly over the mid-fuselage, so the position and size of the fuselage hinomaru is speculative. This unit predominantly operated the Dinah.*

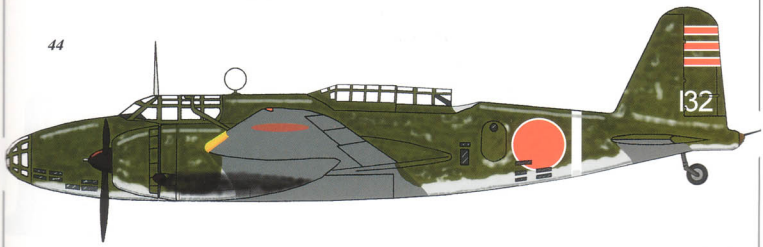


42: *Mitsubishi Ki-21-llb 'Sally' of an unidentified Sentai, at Kamiri, Noemfoor Island, occupied Dutch East Indies, in May 1944. In common with many larger aircraft of this period, sentai markings had been dispensed with, in a favour of a simple number code and, hence, greater protection from camouflage. A particularly dark green was used on this machine, producing a strong contrast with the grey base.*



43

43: *Mitsubishi Ki-21-IIb 'Sally' of 60 Sentai, 3 Chutai, at Aparri, Northern Luzon, Philippines, in January 1945. The overall camouflage was in three distinct styles, although the normal yellow wing identification panels were not carried.*



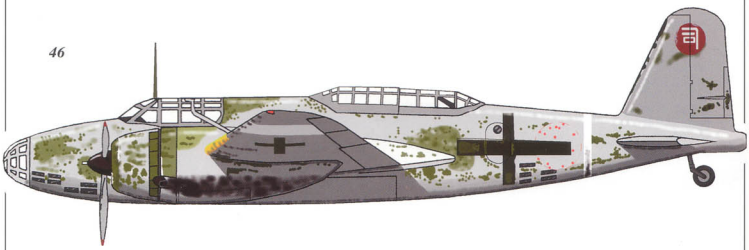
44

44: *Mitsubishi Ki-21-IIa 'Sally' of 3 Dokuritsu Chutai, at Kengun, Japan, on 24th. May 1945. This machine was one of nine Sallys of various subtypes that were involved in an attack on the American air bases at Kita and Naka, on Okinawa, later that day. These aircraft were intended to land and deploy infantry from the Giretsu Special Attack Unit.*

45

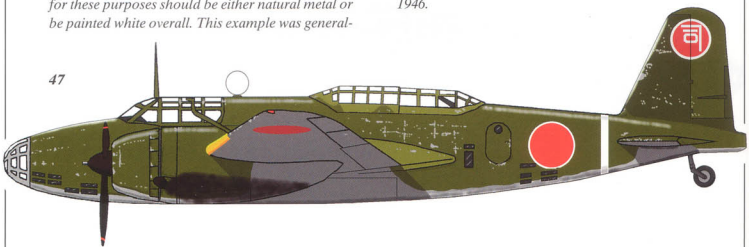
45: *Mitsubishi Ki-21-IIa 'Sally' of 3 Dokuritsu Chutai, at Yonzan, Okinawa, on 24th May 1945. This machine shows a typical disparity in colouring and structural details to be found amongst aircraft of the same unit, with the starboard engine cowling being a replacement from an overall green machine. This was the only aircraft of the above attack to avoid destruction by anti-aircraft fire and it was crash-landed onto Yonzan airfield, tearing off the port engine and nose glazing in the process. Between eight and ten infantrymen from this machine, the sole survivors of the raid at the time of landing, damaged or destroyed 32 US Marine Corps aircraft and large fuel stocks.*

46



46: *Mitsubishi Ki-21-lla 'Sally' of 3 Kokugun (3rd Air Army), shortly after the surrender in August 1945. This machine was one of several Sallys of various sub-types that were used for ferrying the Southern Area surrender delegation, for subsequent liason purposes and for the transfer of Japanese prisoners of war. It was stipulated that aircraft used for these purposes should be either natural metal or be painted white overall. This example was generally stripped of its original paintwork (except for around the engines) and green surrender crosses were crudely applied, having removed almost all of the hinomaru. The combat stripe was retained and the propeller tips were red. This machine ultimately wore 'Tokyo Rose' in script on the nose and was eventually located at RAAF Laverton, Victoria, in 1946.*

47

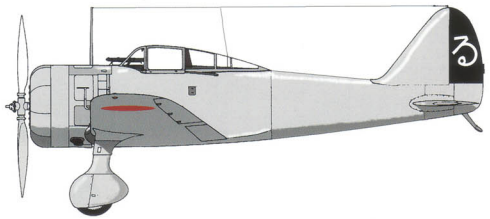


47: *Mitsubishi Ki-21-lla 'Sally' of 3 Kokugun (3rd Air Army) at Sembawang, Singapore, in September 1945. The style of this tail device was notably geometric on this aircraft, although other machines from this unit, such as the preceding illustration above, bore the characters in a less formal and more flowing style.*

48

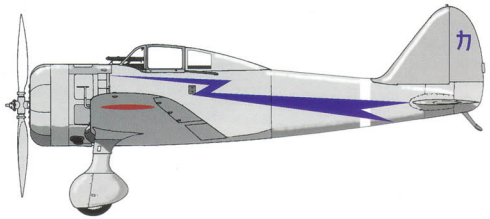
48: *Nakajima Ki-27 'Nate' of 84 Dokuritsu Chutai, 1 Shotai, operating in South China in 1938. This unit carried the red eagle of its parent unit, 64 Sentai. The diagonal fuselage stripe and the number were in the shotai colour, being white, red, yellow or blue, in descending order. The amount of colouring around the cowling and the thickness of the diagonal fuselage stripe varied between aircraft.*

49



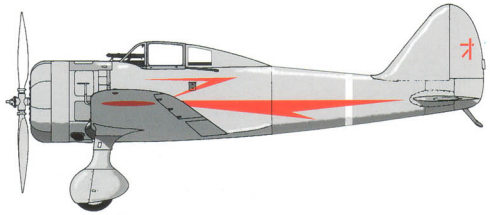
49: *Nakajima Ki-27 'Nate' of 1 Sentai, 1 Chutai, involved in the Nomonhan incident against the USSR in May 1939. The use of black as a chutai colour was unusual, particularly as other aircraft within the same chutai had yellow rudders. The white character on the rudder reads 'Ryu'. This machine was destroyed following a ramming attack by a Soviet Polikarpov I-16 type 10 flown by V. Skabarikhin, who landed successfully, despite severe damage to the port wing of his own aircraft.*

50



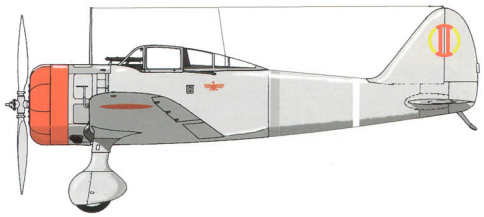
50: *Nakajima Ki-27 'Nate' of 59 Sentai, 2 Chutai, involved in the Nomonhan incident against the U.S.S.R on 15th. September 1939. Its pilot, M/Sgt. Kashide, claimed two victories in the final air battle of the campaign. He later destroyed six B-29s and was ultimately promoted to captain. Although the 2 Chutai colour was normally black, the lightning stripe of this aircraft was stated to be dark blue.*

51



51: *Nakajima Ki-27 'Nate' of 59 Sentai, 1 Chutai, illustrating this unit's early preference for a fuselage (rather than tail) sentai identifier. 1 Chutai used green as its identifier (rather than red) until 1941, whereupon red was adopted and then green was used by the Sentai Hombu.*

52



52: *Nakajima Ki-27 'Nate' of 64 Sentai, 1st Chutai 2nd Shotai, 2nd aircraft. A previous fuselage command band and diagonal upper wing stripes had been overpainted in a slightly darker grey paint. The Sentai badge was the red eagle below the cockpit canopy.*

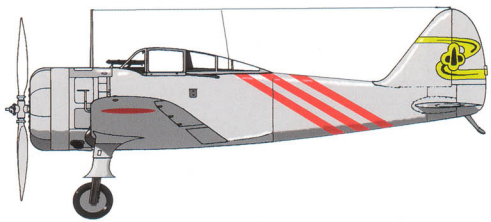
53

53: *Nakajima Ki-27 'Nate' of 24 Sentai, 1 Chutai. The red rudder was somewhat unusual within this unit, but red and / or white combat bands appear to have been normal throughout the sentai. The two white fin stripes, followed by four white rudder stripes, were a play on the sentai number, 24.*

54

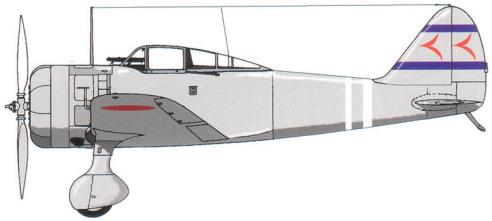
54: *Nakajima Ki-27 'Nate' of 50 Sentai, 1 Chutai (red lightning), with the first character of the pilot's name on the rudder. This aircraft crash-landed following combat with an American Volunteer Group P-40 near Rangoon, Burma, in January 1942. The crash removed the main undercarriage.*

55



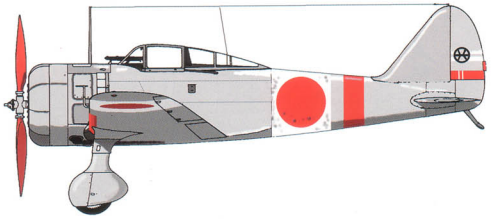
55: *Nakajima Ki-27 'Nate' of 4 Sentai, at Tachiari, Japan, in July 1940. This machine also had three diagonal (but not parallel) red stripes on the upper surface of each wing.*

56



56: *Nakajima Ki-27 'Nate' of 77 Sentai, Sentai Hombu, at Duong Dong, Indo-China, operating over Burma and Malaya in January 1942.*

57

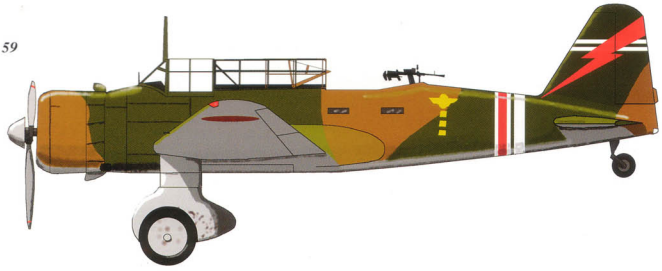


57: *Nakajima Ki-27 'Nate' of 244 Sentai, 2 Chutai. This well-used machine was used for Home Defence duties, as indicated by the white bandages behind the hinomaru. Additional features, that were also common with the Nates of 246 Sentai, are red (rather than yellow) wing identification stripes and red propeller blades.*

58

58: *Mitsubishi Ki-30 'Ann' of 90 Sentai, 1 Chutai (red rudder), 1 Shotai (white fin band), 3rd aircraft (3 red stripes). Between 1938 and 1941, this unit indicated its three chutai by means of coloured rudders, being red, yellow and uncoloured respectively.*

59

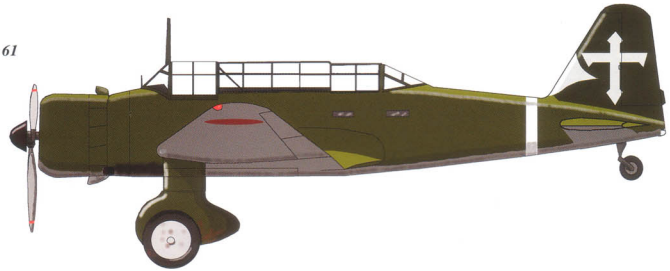


59: *Mitsubishi Ki-30 'Ann' of 31 Sentai, 2 Chutai (2 horizontal white fin stripes), based in Thailand at the onset of operations over Malaya in December 1941. Several machines within this unit had already claimed victories and these were recorded below their rear cockpits, in the same manner as this example. At least one other aircraft (with two kills) carried the same white-red-white band ahead of the combat band.*

60

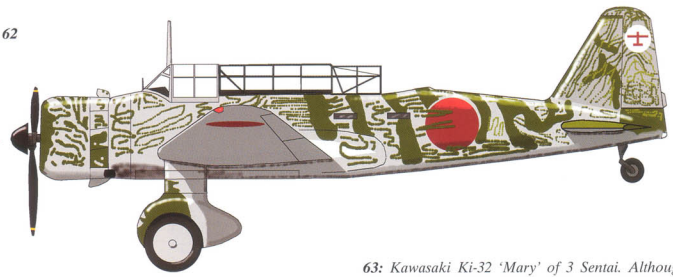
60: *Mitsubishi Ki-30 'Ann' of 16 Sentai, 1 Chutai. The tail stripes had been painted freehand, being somewhat crudely drawn at the forward edge and, being white, denoted 1 Chutai.*

61



61: *Mitsubishi Ki-30 'Ann' of 87 Sentai in China in 1940-41. There were no chutai distinctions regarding the colour of the sentai device which, at this period, was the cross. However, this machine represented an interesting transitional phase, because only the flag-shaped device that it also bore was carried on the unit's subsequent equipment, the Nate, when it was painted in the respective chutai colours.*

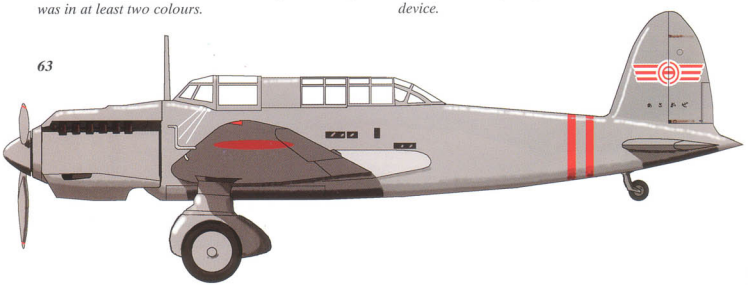
62



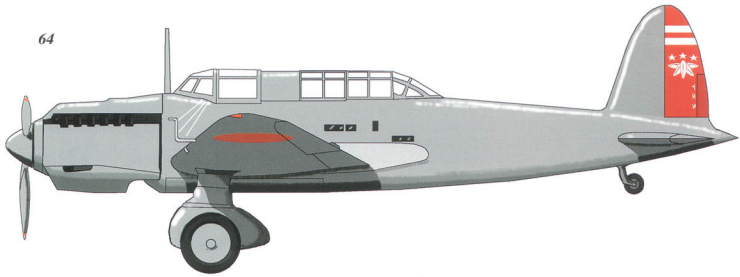
62: *Mitsubishi Ki-30 'Ann' of Toyooka Shikan Gakko (Toyooka Officer's School), at Irumagawa, Japan, in October 1945. This was one of several Anns which had been used for maintenance training. Several styles of camouflage were evident on each machine and the scribble on the tail of this aircraft was in at least two colours.*

63: *Kawasaki Ki-32 'Mary' of 3 Sentai. Although this unit operated three chutai, there were no chutai distinctions and all aircraft carried the same tail device. However, several of this unit's aircraft bore small inscriptions across the tailplane below the sentai device. When this unit adopted green / brown uppersurface camouflage, several of the aircraft received relatively large white characters above the device.*

63

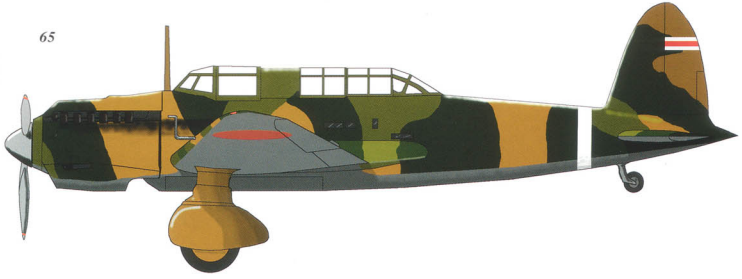


64



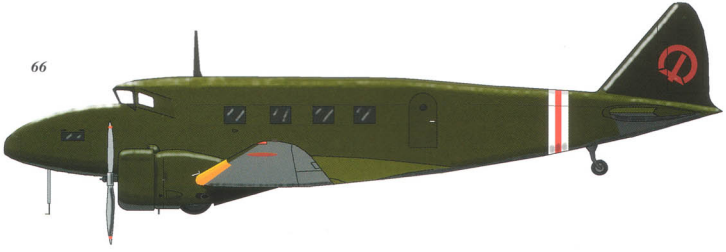
64: *Kawasaki Ki-32 'Mary' of 75 Sentai, 2 Chutai, in 1938, at the time that this unit was formed. The characters on the fin appeared both vertically and horizontally on aircraft amongst this chutai. The white lines below the cockpit are stadia line, which were an aid to dive-bombing.*

65



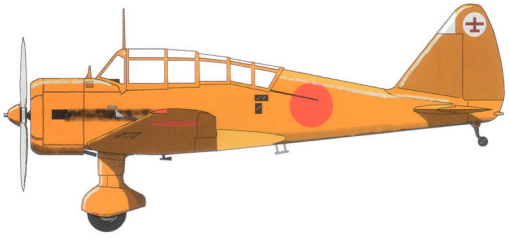
65: *Kawasaki Ki-32 'Mary' of 75 Sentai, in Manchuria in 1939.*

66



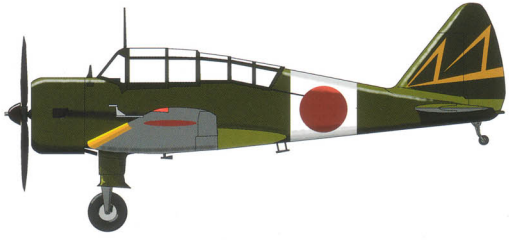
66: *Nakajima Ki-34 'Thora' of Teisin Sentai, 2 Chutai, in January 1942. This unit was originally established as the Teisin Rentai (Raiding Parachute Regiment) and was first used in action in a paratroop landing on Palembang, Sumatra. The unit device was an open parachute. The small underwing hinomaru was placed well forward on this machine.*

67



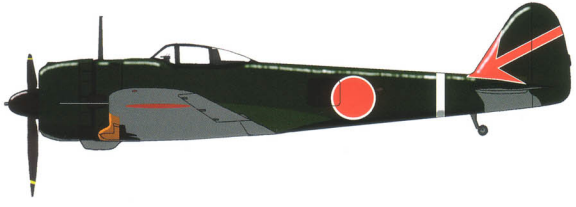
67: *Tachikawa Ki-36 'Ida' of the Koku Shikan Gakko (Army Air Academy) at Irumagawa, Japan. This variant of the operational type retained the original wing bomb racks and main wheel spats, so distinguishing itself from the purely trainer Ki-55 version, although the gun-sight had been removed from this aircraft.*

68



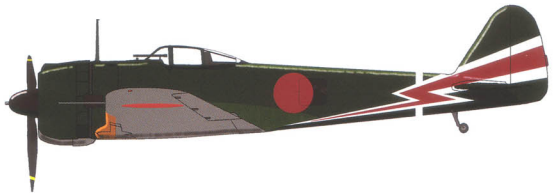
68: *Tachikawa Ki-36 'Ida' of 47 Sentai, 3 Chutai, at Kashiwa, Japan, in 1945. This was the unit's 'hack' machine and it was photographed amongst a pack of the unit's principal combat aircraft, the Tojo.*

69



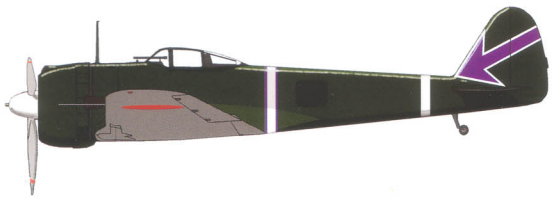
69: *Nakajima Ki-43-ll 'Oscar' of 64 Sentai, 2 Chutai, operating over Burma and Malaya in January 1942. This machine had very dark green upper surfaces, which extended very low down the fuselage sides. The undercarriage doors were in the same colour, which was intended to reduce the chances of detection when the aircraft was parked.*

70



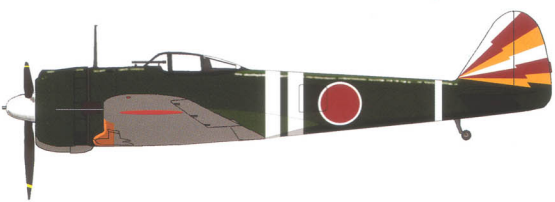
70: *Nakajima Ki-43-I 'Oscar' of 50 Sentai, 2 Chutai, operating over Burma in May 1942. This was reported to be the chutai commander's personal machine, although the second chutai colour for this sentai was, in fact, yellow, rather than red (which was actually carried by the first chutai). The red paintwork of this aircraft was noticeably faded.*

71



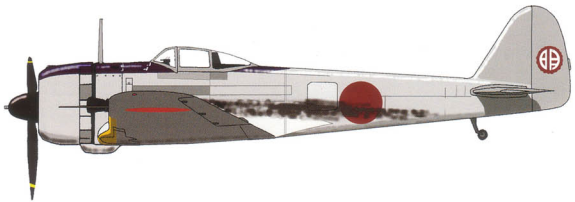
71: *Nakajima Ki-43-I 'Oscar' of 64 Sentai, Sentai Hombu, operating over Burma in May 1942. This machine carried diagonal blue and white bars on the upper wings and was the personal aircraft of the sentai commander, Lt. Col. Takeo Kato, whose personal 'Perry' was illustrated earlier. He was killed in action on 22nd May 1942, hit by return fire from a Bristol Blenheim IV of 60 Squadron R.A.F., flown by W/O M. Huggard, which had just attacked Kato's base at Akyab, Burma. At the time of his death, Kato had claimed 18 kills, although, by this time, he did not carry them on his machine and did not permit other pilots in his unit to carry victory symbols either. He was posthumously promoted to Major General.*

72



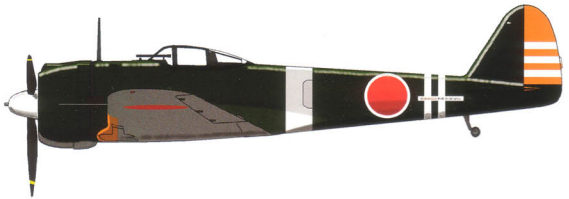
72: *Nakajima Ki-43-I 'Oscar' of 11 Sentai, Sentai Hombu, operating over Burma in October 1942. This machine was the personal aircraft of the Sentai commander and, instead of carrying the single lightning bolt of the sentai device, carried a more complex design based upon the colours of all three chutai. NB: this profile is based upon drawings in several sources.*

73



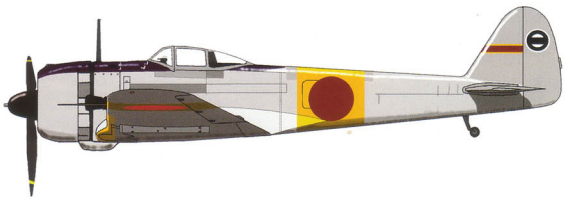
73: *Nakajima Ki-43-ll 'Oscar' of Akeno Hikoshidan Hikotai (Akeno Air Instructor Division). This unit was established in 1923, for advanced pilot training. This machine was in an overall natural metal finish and, as such, had an extended anti-glare panel to the rear of the canopy. In common with many of the unpainted Oscars held by this unit, no other decoration was carried. However, camouflaged Oscars often carried home defence bandages and combat bands, since the instructors frequently flew interceptor missions.*

74



74: *Nakajima Ki-43-l 'Oscar' of 1 Sentai, 3 Chutai, at Hanoi, Indo-China, in October, 1943. This was the personal machine of Major Kinshiro Takeda, whose broad command band aft of the cockpit was repeated as diagonal stripes on both the wings and the horizontal tail-plane. The elevators were also yellow.*

75

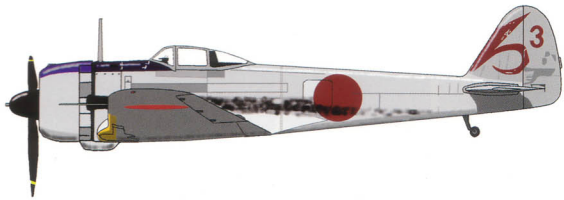


75: *Nakajima Ki-43-ll 'Oscar' of the Kumagawa Hikoshidan Hikotai (Kumagawa Instructor Air Division) in early 1944. The yellow bandage behind the hinomaru indicated that the aircraft was used for air defence duties (when drop tanks would also have been carried), although its primary task was in the training role.*

76

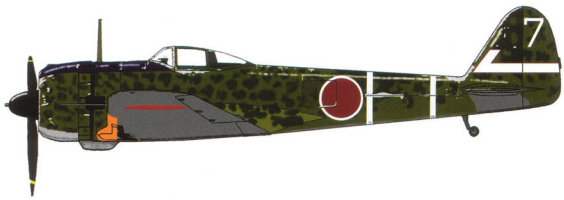
76: *Nakajima Ki-43-ll 'Oscar' of 63 Sentai, 3 Chutai, in New Guinea, in mid-1944. This machine had crash-landed and was in a somewhat battered condition. The green sprayed patches on the natural metal fuselage (but not, apparently, on the wings) had faded considerably and their camouflage effect was somewhat negated by the bright unit markings.*

77



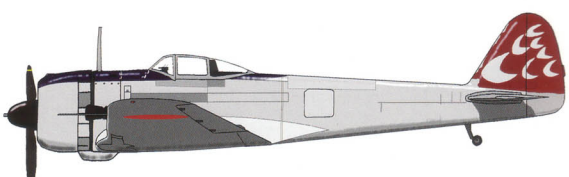
77: *Nakajima Ki-43-ll 'Oscar' of 55 Sentai, 2 Chutai, in Japan in late 1944. This machine was used for interception duties against B-29s. It was in a weathered natural metal overall finish, apart from the anti-glare panelling in front of the cockpit. When originally applied, this paint was normally black, but faded under intense sunlight to a distinct blue shade. The paintwork had deteriorated even more noticeably above the engine cowling. The tail of the sentai marking of this aircraft appeared to have been created from a succession of straight lines and the lobes of the red number were similarly crafted. A certain amount of erosion had occurred in this area, since these markings had been applied directly to the skin.*

78



78: *Nakajima Ki-43-ll 'Oscar' of 77 Sentai, 1 Chutai, in late 1944. It carried the final style of unit marking, which was adopted in 1944. The overall paintwork had eroded in patches, particularly around the nose, rear fuselage, tail area and undercarriage doors, which were also dark green.*

79



79: *Nakajima Ki-43-ll 'Oscar' of 248 Sentai, Sentai Hombu, at Alexishafen, New Guinea, in late 1944. The chutai aircraft merely had the leaf shapes in the chutai colours, rather than a completely coloured tailplane.*

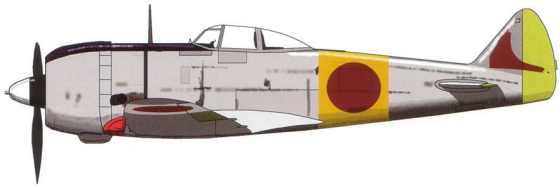
80

80: *Nakajima Ki-43-ll 'Oscar' of 25 Sentai, 1 Chutai, at Hankow, China, in October 1945. Aircraft from both 1 and 2 Chutai were held at this airfield following the surrender and these comprised mixed units of Oscars and Franks.*

81

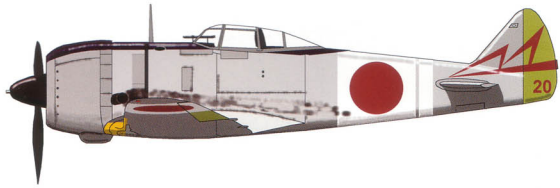
81: *Nakajima Ki-44-la 'Tojo' of 47 Dokuritsu Chutai, 3 Shotai, at Pegu, Burma, in March 1942. This was the personal machine of Captain Yasuhiko Kuroe, the unit commander. As well as carrying the Ronin unit device below the cockpit, it carried a small black 8 on the undercarriage doors. It was one of four prototype Tojos that operated over Burma at this time, although the unit had also operated five more over Burma, Malaya and Singapore from the start of the war. Several of the other aircraft, including black 5 and 6, were also over-painted with dark green mottle. The unit was withdrawn to Japan in April 1942.*

82



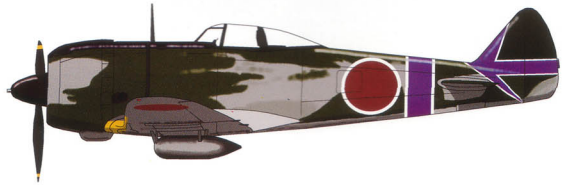
82: *Nakajima Ki-44-llb 'Tojo' of 87 Sentai, 2 Chutai, at Kashiwa, Japan, in late 1943. The unit device had eroded somewhat, the wing identification stripes were red and the home defence bandages were a combination of white and yellow, which was not unique.*

83



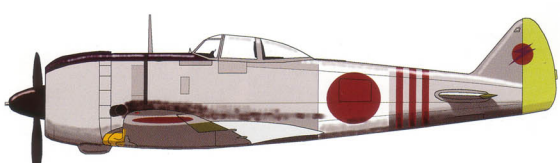
83: *Nakajima Ki-44-lb 'Tojo' of 47 Sentai, 2 Chutai, at Chofu, Japan, in mid - 1944. This unit was used to intercept bombers in the Tokyo area. Other machines from this unit carried numbers at the base of the rudder and / or on the undercarriage doors.*

84



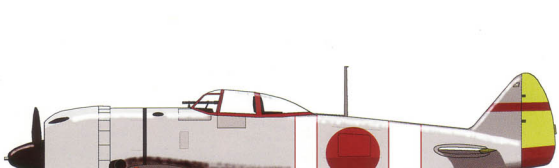
84: *Nakajima Ki-44-llb 'Tojo' of 85 Sentai, Sentai Hombu, at Canton, China, in late 1944. This was the personal machine of the Sentai commander, Major Togo Saito, but the unit insignia on the majority of the other aircraft consisted of only the horizontal band and upper barb, which were painted in the chutai colours.*

85



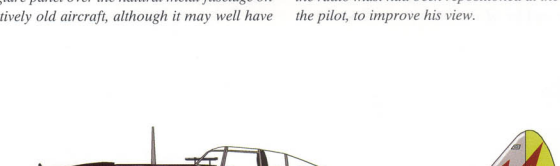
85: *Nakajima Ki-44-llb 'Tojo' of 246 Sentai, 2 Chutai, at Taisho, Japan, in August 1944. This chutai had no distinguishing feature, as opposed to 1 and 3 Chutai, which had single horizontal white and yellow bands respectively, above the sentai marking.*

86



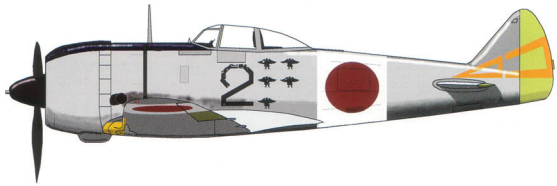
86: *Nakajima Ki-44-lb 'Tojo' of 246 Sentai, 2 Chutai, at Taisho, Japan, in late 1944. The red canopy framing was particularly notable, as was the lack of glare panel over the natural metal fuselage on this relatively old aircraft, although it may well have peeled off. The tail band (which was not horizontal on this machine) was the final version of the unit device and appeared in the chutai colours. Uniquely, the radio mast had been repositioned at the behest of the pilot, to improve his view.*

87



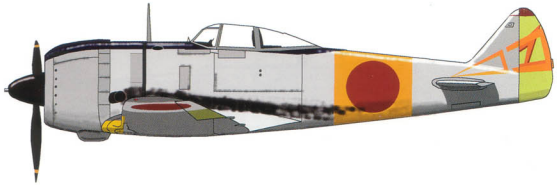
87: *Nakajima Ki-44-llb 'Tojo' of 47 Sentai, Shinten Seiku-tai, at Narimasu, Japan, in late 1944. This was a dedicated Special Attack unit within the sentai and was devoted to ramming attacks on B-29 formations. The special unit device was based upon the original Ronin*, symbol of 47 Dokuritsu Chutai, which was the parent unit of this sentai.*
** A freelance Samurai*

88



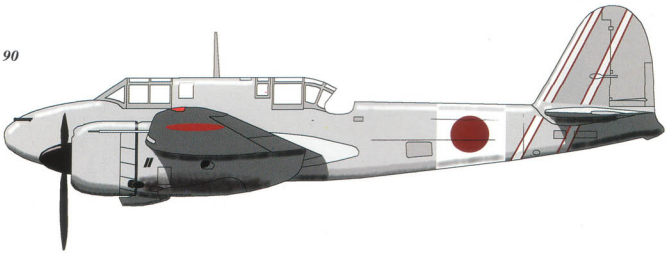
88: *Nakajima Ki-44-llb 'Tojo' of 70 Sentai, 3 Chutai, at Kashiwa, Japan, in 1945. This aircraft was flown by 2nd Lt Makoto Ogawa, who ultimately scored 9 victories. The aircraft was in natural metal overall, with the exception of the fabric-covered control surfaces which, in common with most IJAAF unpainted aircraft, were light grey-green. The black-grey number and all of the kill markings were scratched and eroded.*

89



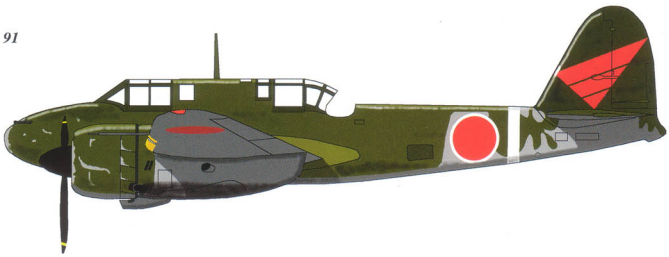
89: *Nakajima Ki-44-llb 'Tojo' of 70 Sentai, 3 Chutai, at Kashiwa, Japan, in 1945. This aircraft illustrated some of the more common variations to be found in the presentation of devices within a unit. Apart from being thinner and at a different angle to the machines above, the rudder of this aircraft was evidently a replacement from a machine from 47 Sentai, 3 Chutai, which had had a yellow unit device, outlined in red. This type of over-painting was quite common. The red cap to the rudder and, partially, to the top fin was crudely hand painted.*

90



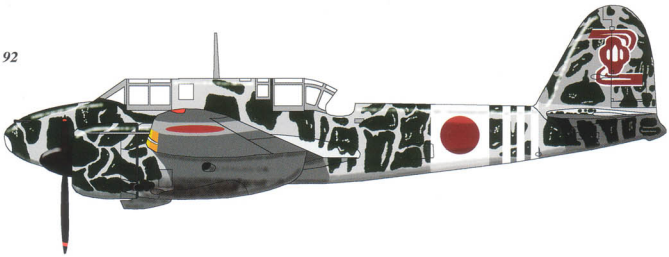
90: *Kawasaki Ki-45 KAla 'Nick' of 5 Sentai, 1 Chutai, at Kashiwa, Japan, in September 1942. This machine carried practically the same markings as the previous unit equipment, the 'Nate', although the markings were subsequently subjected to much change throughout the war, as a morale booster.*

91



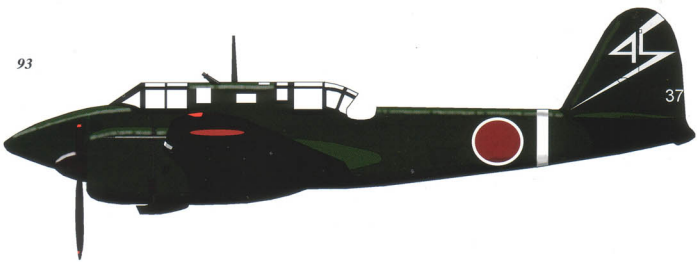
91: *Kawasaki Ki-45 KAla 'Nick' of 21 Sentai, 2 Chutai. This unit was operational throughout the occupied former Dutch East Indies and had no third chutai.*

92



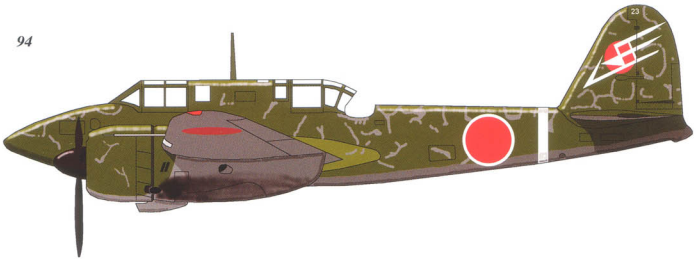
92: *Kawasaki Ki-45 KAla 'Nick' of 4 Sentai, 2 Chutai, at Ozuki, Japan, in early 1944.*

93



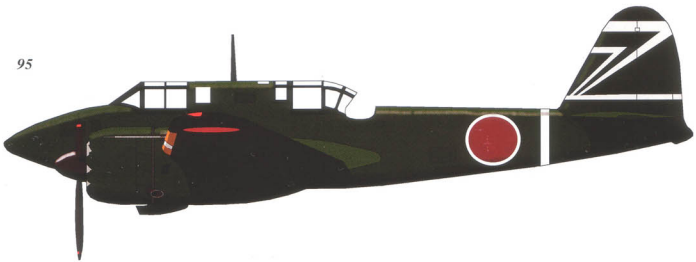
93: *Kawasaki Ki-45 KAlc 'Nick' of 45 Sentai, 1 Chutai, in the Philippines in late 1944.*

94



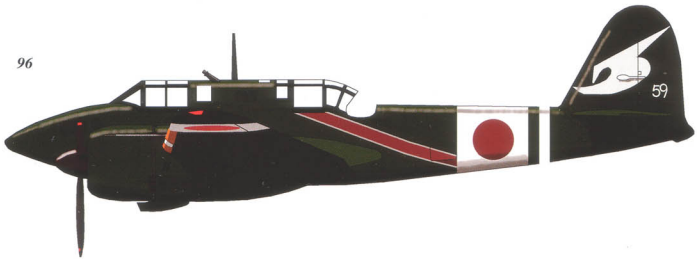
94: *Kawasaki Ki-45 KAlc 'Nick' of 13 Sentai, captured at Clark Field, Philippines, in February 1945. This unit had no chutai distinctions at this stage of the war, but the aircraft were identified by number, in this case 'white 23' at the top of the rudder. Earlier KAlc versions were painted in light grey overall, with the same unit device, but no combat bands.*

95



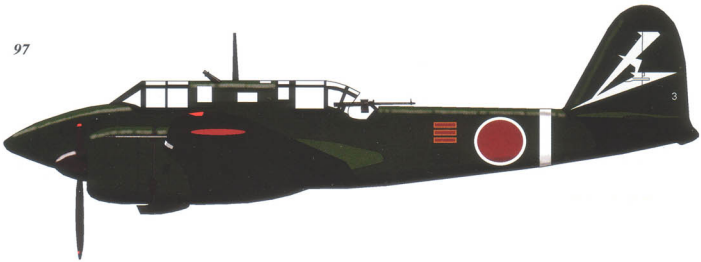
95: *Kawasaki Ki-45 KAlc 'Nick' of 27 Sentai, 1 Chutai, in the Philippines in early-1945.*

96



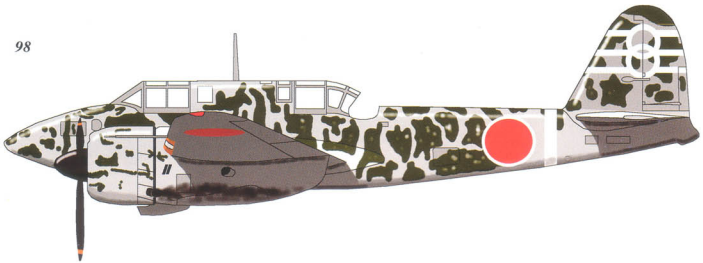
96: *Kawasaki Ki-45 KAlc 'Nick' of 53 Sentai, 1 Chutai, at Matsudo, Japan in February 1945. This machine was flown by the commanding officer of the chutai, as evidenced by the white-red-white command band.*

97



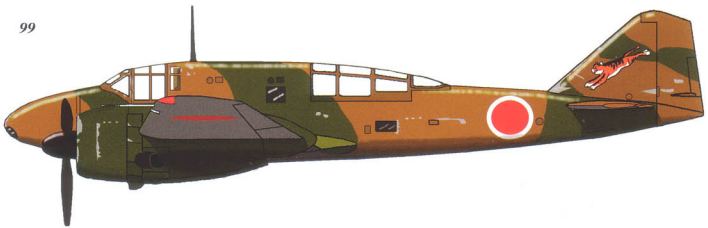
97: *Kawasaki Ki-45 KAlc 'Nick' of 5 Sentai, at Gifu, Japan, in August 1945. All chutai carried this marking without any colour distinction, although the overall light grey machines had it shadow-shaded in black. Most Nicks of this unit carried the names of prominent places on the tail, but this aircraft merely carried 'white 3'. The three bars ahead of the fuselage hinomaru may well have been victory symbols. By the final stage of the war, this unit was in the process of re-equipping with the Ki-100. Both type were operated from Gifu, with the Ki-100s carrying the final variation of the sentai device.*

98

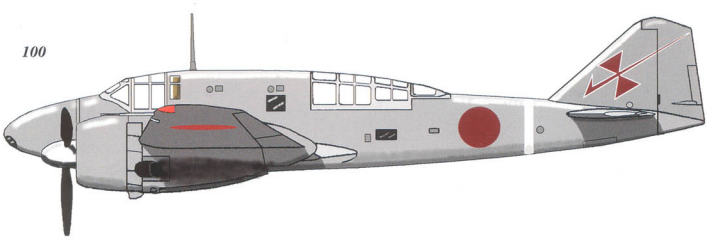


98: *Kawasaki Ki-45 KAlc 'Nick' of 71 Dokuritsu Chutai at Kallang, Singapore, in August 1945. In common with many other Nicks, the outline of the blotch camouflage had been sprayed first, then the blotches were filled in, leaving patches of the base colour showing through. The fuselage hinomaru had faded to a pink shade.*

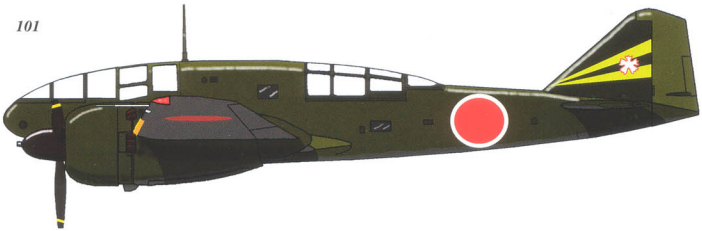
99



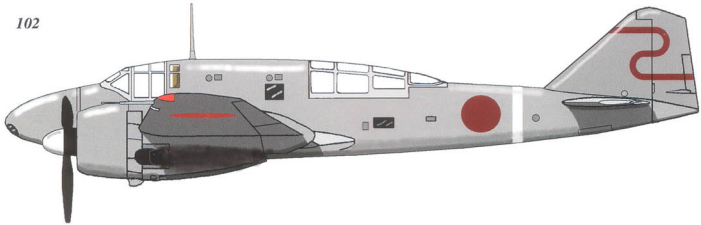
99: *Mitsubishi Ki-46-II 'Dinah' of 82 Sentai, in China in 1942. This unit inherited the 'kitten' device of 18 Dokuritsu Chutai, but with no chutai distinctions. The tail device represented a medieval Japanese fable, where 'the tiger can run 1,000 miles in a day'.*



100: *Mitsubishi Ki-46-ll 'Dinah' of 81 Sentai, 2 Chutai. This was a much-travelled unit, operating throughout almost the entire area of IJAAF involvement. Yellow was used as an alternative outline colour for this chutai.*

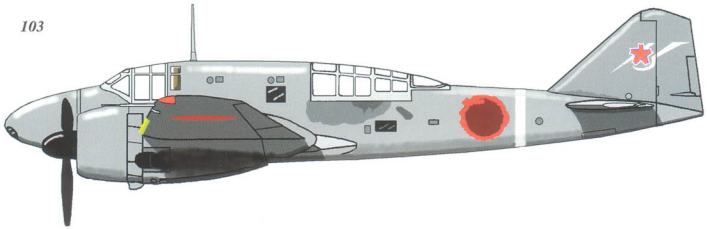


101: *Mitsubishi Ki-46-lll 'Dinah' of 55 Dokuritsu Chutai, at Nanking, China, in 1944. Typically, this unit did not paint their unit device over the rudder which, on this machine, appeared to be a replacement.*



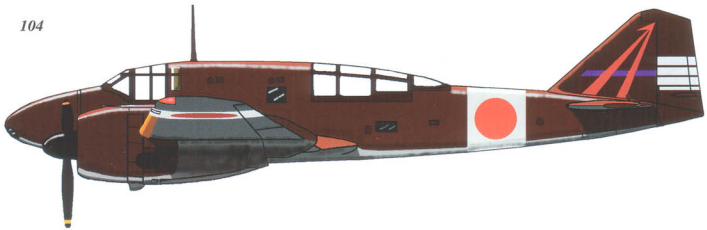
102: *Mitsubishi Ki-46-ll 'Dinah' of 76 Dokuritsu Chutai, captured by Australian forces at Gasmata, New Britain, in April 1944.*

103



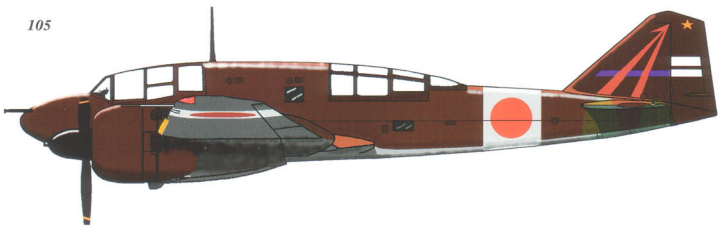
103: *Mitsubishi Ki-46-ll 'Dinah' of 15 Sentai, abandoned at Clark Field, Philippines, in January 1945. This aircraft originally had a white outline to the fuselage hinomaru, but this had been roughly overpainted in a lighter tint of red.*

104



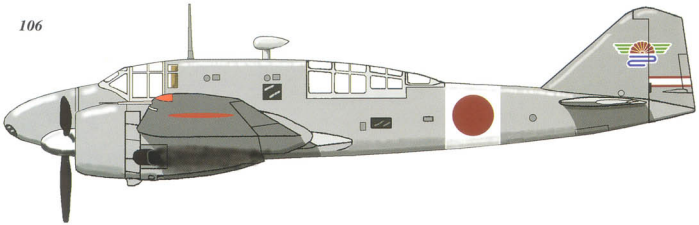
104: *Mitsubishi Ki-46-ll 'Dinah' of 17 Dokuritsu Chutai, at Chofu, Japan, during early 1945. This unit tended to paint their aircraft with red-earth uppersurfaces. A few machines had a white horizontal fin flash, rather than the blue one above. Varying numbers of rudder stripes were carried and these were shotai designators. Some aircraft had a number code in place of the rudder stripes.*

105



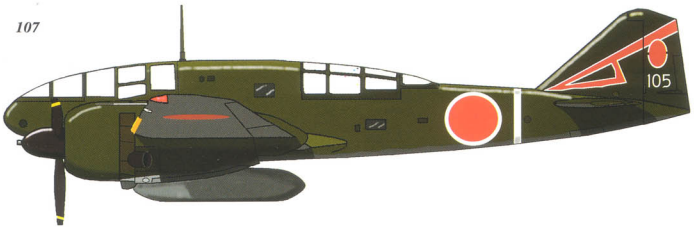
105: *Mitsubishi Ki-46-lllb 'Dinah' of 17 Dokuritsu Chutai, at Chofu, Japan, during early 1945. This unit also operated several examples of the Ki-46-lll KAI bomber - destroyer version of the Dinah.*

106



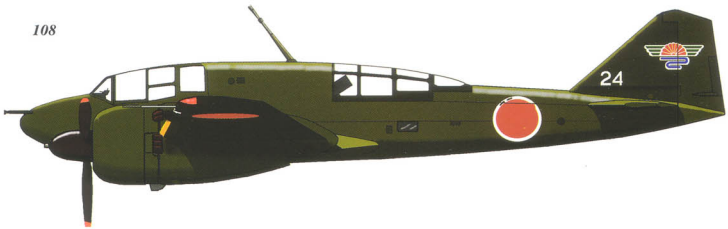
106: *Mitsubishi Ki-46-ll 'Dinah' of 16 Dokuritsu Chutai, at Kashihabara, Japan, in April, 1945. This was one of only four units that were permitted to use the sacred chrysanthemum as their unit device.*

107

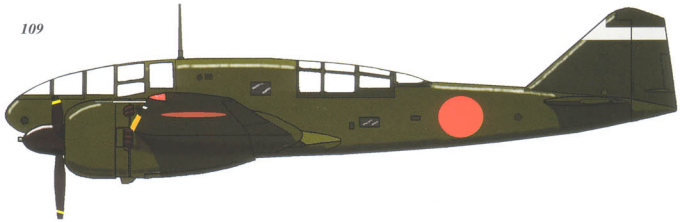


107: *Mitsubishi Ki-46-lll 'Dinah' of 106 Sentai at Yachimata, Japan, in April 1945. The unit device and numbering were indifferently applied on this machine. Aircraft 125 from the same unit had multiple-exhaust engines, no long range tank and a white-outlined red diamond, in place of the stencilled oval on the above machine. N.B. one source contended that the enclosed area of the unit device was also red.*

108

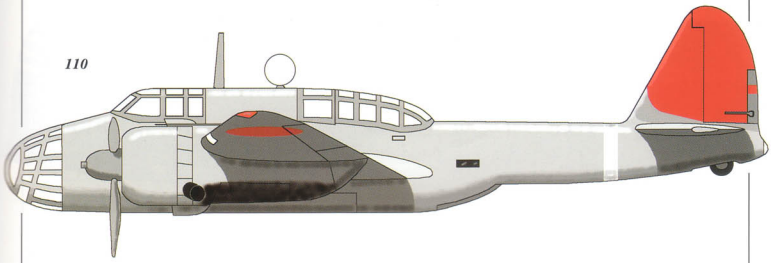


108: *Mitsubishi Ki-46-lll 'Dinah' of 16 Dokuritsu Chutai, at Kashihabara, Japan, in July 1945, when this unit was expanded from chutai status. This aircraft was equipped with a 37mm oblique cannon, in conjunction with 2 x 20mm nose cannon and had outlined upperwing hinomaru.*



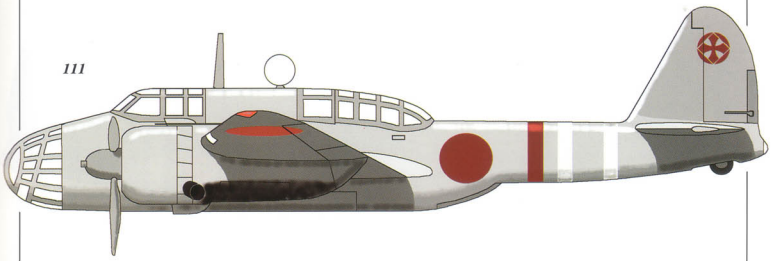
109

109: *Mitsubishi Ki-46-lll 'Dinah' of 19 Dokuritsu Chutai, at Kanoya, Japan, in August, 1945. Other machines from this unit carried a two-digit number code at the lower front edge of the fin.*



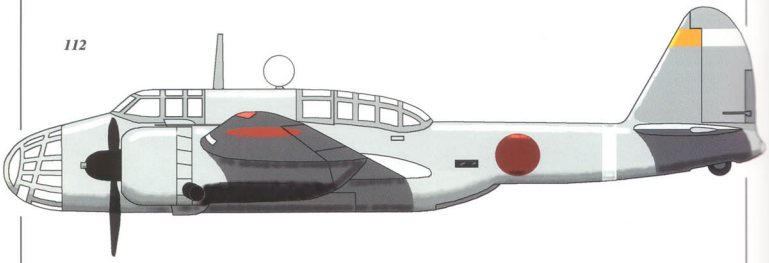
110

110: *Kawasaki Ki-48-la 'Lily' of 45 Sentai, 2 Chutai, operating in North China in 1941.*

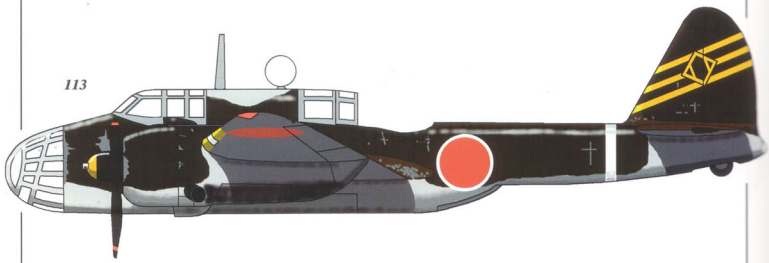


111

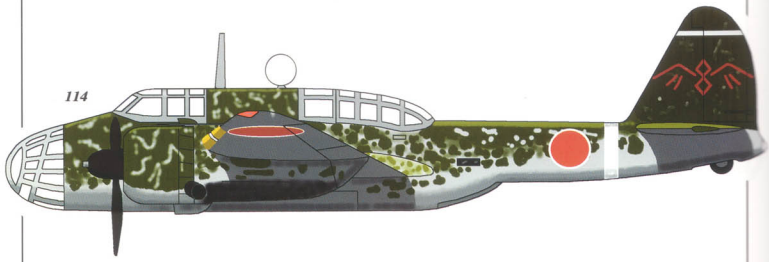
111: *Kawasaki Ki-48-l 'Lily' of Hokota Hikoshidan Hikotai (Hokota Instructor Air Division), at Hokota, Japan. This unit operated the Lily from 1940 until the end of the war and many of their machines still wore overall light grey in 1945.*



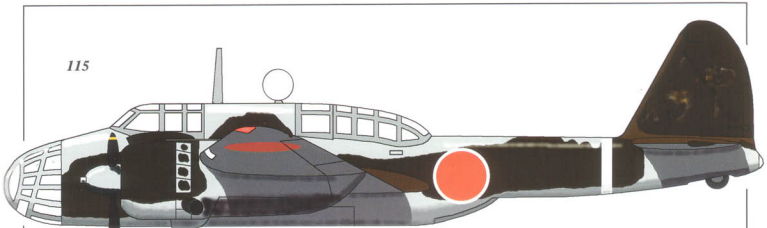
112: *Kawasaki Ki-48-I 'Lily' of 3 Sentai, 3 Chutai at Sakhalin Island, Northern Japan. Within this unit, the sentai device was the band on the fin, painted in the chutai colour, with any subsequent banding or stripes on the rudder indicating the shotai and individual aircraft.*



113: *Kawasaki Ki-48-I 'Lily' of 34 Sentai, 2 Chutai, at Babo, New Guinea, in mid-1943. The overall green uppersurfaces were somewhat worn. The machine had yellow wing identification panels, with its spinner tips in the chutai colour.*

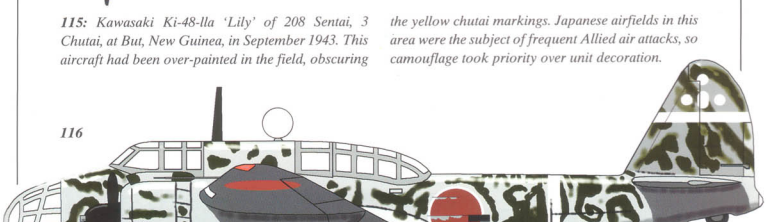


114: *Kawasaki Ki-48-I 'Lily' of 8 Sentai, 2 Chutai, at Toungoo, Burma in mid-1943. This machine had yellow wing identification panels and, notably, had white-outlined underwing hinomaru.*



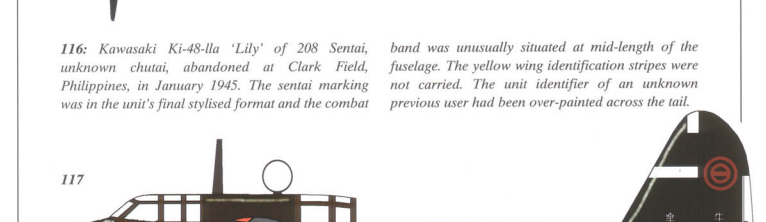
115

115: *Kawasaki Ki-48-lla 'Lily' of 208 Sentai, 3 Chutai, at But, New Guinea, in September 1943. This aircraft had been over-painted in the field, obscuring the yellow chutai markings. Japanese airfields in this area were the subject of frequent Allied air attacks, so camouflage took priority over unit decoration.*



116

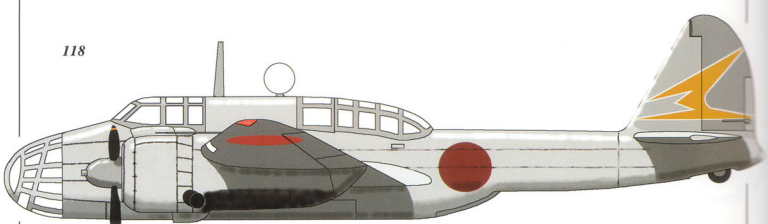
116: *Kawasaki Ki-48-lla 'Lily' of 208 Sentai, unknown chutai, abandoned at Clark Field, Philippines, in January 1945. The sentai marking was in the unit's final stylised format and the combat band was unusually situated at mid-length of the fuselage. The yellow wing identification stripes were not carried. The unit identifier of an unknown previous user had been over-painted across the tail.*



117

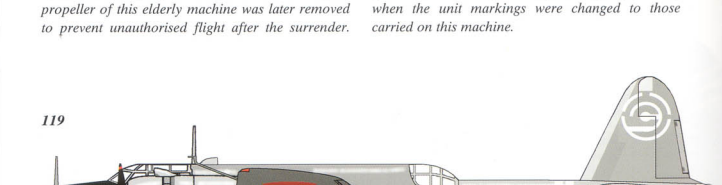
117: *Kawasaki Ki-48-l 'Lily' of 90 Sentai, 2 Chutai, which crash-landed on the beach at Motobu, Okinawa, in April 1945. The normal sentai markings consisted of an incomplete inner circle, so giving a '9 within an 0', which is a play on 90, the sentai number. However, for some reason, the inner circle was joined on this machine. The sentai named its aircraft after stars, with the white characters at the base of the fin and rudder of this machine signifying 'Altair'. This aircraft had a heavily scuffed port wing root and no combat band was carried. Other aircraft within this unit had varying rows of horizontal stripes across the fin.*

118



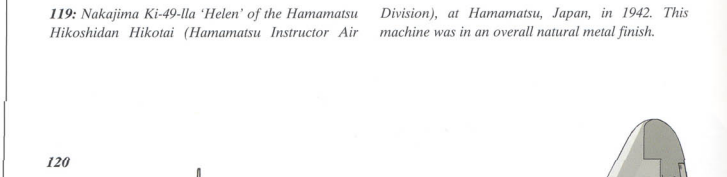
118: *Kawasaki Ki-48-lla 'Lily' of 3 Sentai, 3 Chutai, at Noshiro, Japan, in August 1945. The port propeller of this elderly machine was later removed to prevent unauthorised flight after the surrender. This unit had partially re-equipped with 'Randy' ground-attack aircraft at the final stage of the war, when the unit markings were changed to those carried on this machine.*

119



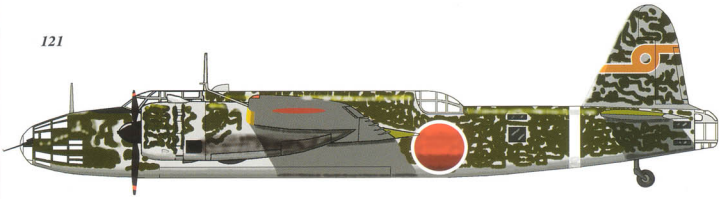
119: *Nakajima Ki-49-lla 'Helen' of the Hamamatsu Hikoshidan Hikotai (Hamamatsu Instructor Air Division), at Hamamatsu, Japan, in 1942. This machine was in an overall natural metal finish.*

120



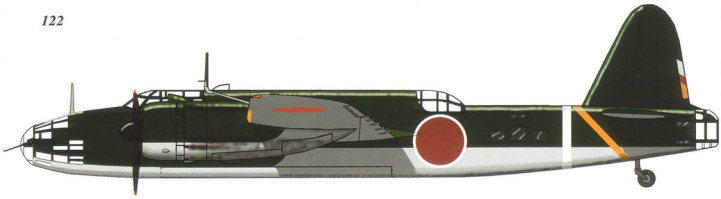
120: *Nakajima Ki-49-lla 'Helen' of the Tokorozawa Hikoshidan Seibi Hikotai (Tokorozawa Instructor Maintenance Division), at Tokorozawa, Japan, in November 1943. This machine was in an overall natural metal finish and the black bars across the rudder was the unit identifier. This unit operated quite a variety of aircraft, each of which carried a black Kana character on the rudder, above the unit marking.*

121



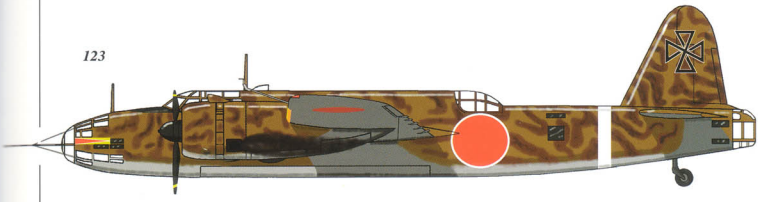
121: *Nakajima Ki-49-llb 'Helen' of 62 Sentai, 3 Chutai, at Sungei Patani, Burma, in March 1944, operating in the Imphal campaign. This was one of the few sentai that used brown as a chutai colour throughout the war, albeit for 1 Chutai.*

122



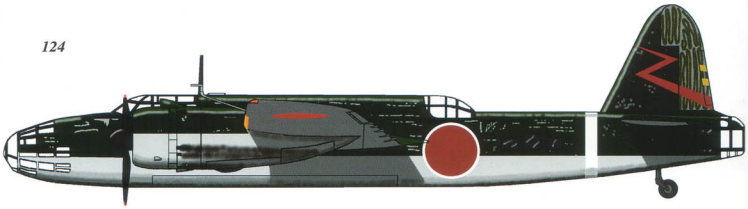
122: *Nakajima Ki-49-llb 'Helen' of 95 Sentai, 3 Chutai, in Manchukuo in mid-1944. The diagonal fuselage band was the sentai device and this unit was one of the few to continually use fuselage, rather than tail, identifiers.*

123



123: *Nakajima Ki-49-llc 'Helen' of 74 Sentai, at Tochigi, Japan, in October 1944. Several of the formation leaders were equipped with sea-search radar, including this example, while others were equipped with turret-mounted 20mm cannon. The tail symbol meant 'four sevens', which was a play on the sentai number. Although this unit had previously used the white / red / yellow format for chutai identification, all 48 Helens at this base wore black and white symbols, known as 'Iron Crosses' to their crews.*

124



124: *Nakajima Ki-49-IIb 'Helen' of 51 Hikoshidan Shireibu Hikohan (51 Air Brigade) at Nielson Field, Philippines, in March 1945. This machine had been fitted with a replacement rudder at some stage, prior to the application of unit markings. It had a higher demarcation line between the uppersurface and undersurface paintwork and also had a non-standard nose window arrangement. It had also suffered from a curious erosion pattern to the uppersurface paintwork, which gave the effect of the paint having been ground-off from the metalwork.*

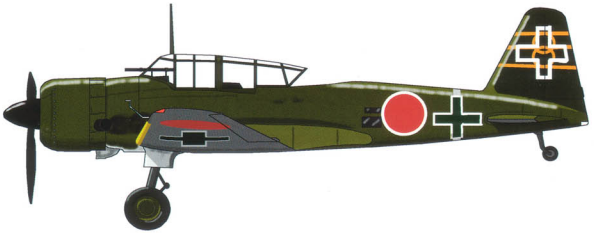
125

125: *Mitsubishi Ki-51 'Sonia' of 44 Sentai, 1 Chutai, in 1942. Here, the hinomaru was unusually positioned on the tail plane and this was the sentai device, whilst the flowing white band signified 1 Chutai. Occasionally, the sentai marking was not carried by this unit's machines but, more often, it was the chutai identifiers that were missing.*

126

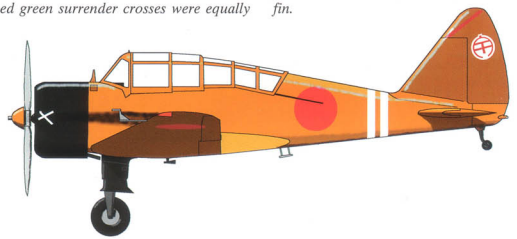
126: *Mitsubishi Ki-51 'Sonia' of 70 Dokuritsu Chutai. The green overspray partially covered the combat band. The rudder apparently bore primer repair patches and the aircraft itself was generally in a battle-damaged condition, including a missing tail cone. The fuselage hinomaru had faded to a pink shade, but the wing identification stripes had a prominent orange tint.*

127



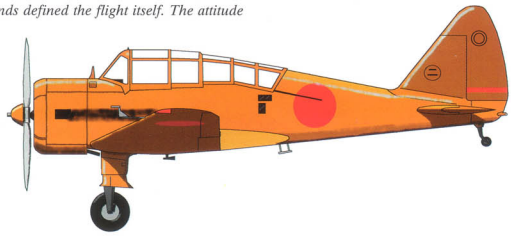
127: *Mitsubishi Ki-51 'Sonia' of 89 Dokuritsu Chutai, at Labuan, Borneo, in August 1945, where it had ferried part of the official Japanese surrender delegation. The original yellow chutai markings had poorly been applied on both sides, having been painted freehand. The generally horizontal lines were not parallel to each other, either. The superimposed green surrender crosses were equally badly drawn, with the starboard tail cross being bigger than the port one. The fuselage crosses were applied over the combat band. This machine was later appropriated by 4 Squadron, RAAF, for use as a squadron "hack". It then received further and similarly roughly-painted Australian squadron codes, in the form of white "QE?" at the base of the fin.*

128

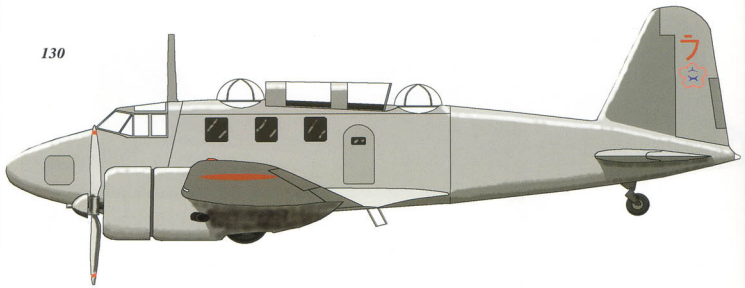


128: *Tachikawa Ki-55 'Ida' of the Utsunomia Hikoshidan Hikotai (Utsunomia Instructor Air Division) in 1940. Most aircraft carried Kana characters on the engine cowling. The red stripe on the fin was the flight commander's identifier, whilst the white bands defined the flight itself. The attitude of the unit symbol varied from aircraft to aircraft, from horizontal to the ground to horizontal to the aircraft in level flight. This device was also painted in black and white on some Ki-55s, which the unit continued to operate until 1945.*

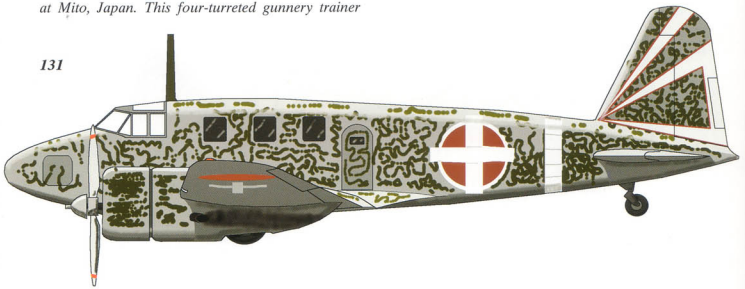
129



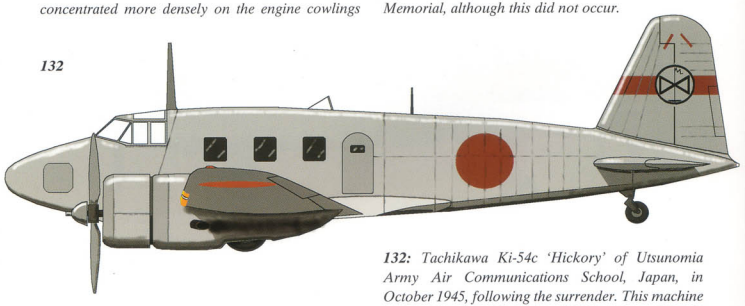
129: *Tachikawa Ki-55 'Ida' of the Niigata Hikoshidan Hikotai (Niigata Instructor Air Division), at Niigata, Japan, in September 1945. Extra fuselage windows had been fitted. The unit device was based upon the first Kana character of 'Niigata', which are the two black horizontal stripes within a circle. Prior to their destruction later in 1945, which formed part of the obligations of surrender, some of these trainers received a large white J on their rudders.*



130: *Tachikawa Ki-54b 'Hickory' of Mito Hikoshidan Hikotai (Mito Instructor Air Division), at Mito, Japan. This four-turreted gunnery trainer had blue-black anti-glare panelling to the inner faces of each engine cowling and nacelle.*

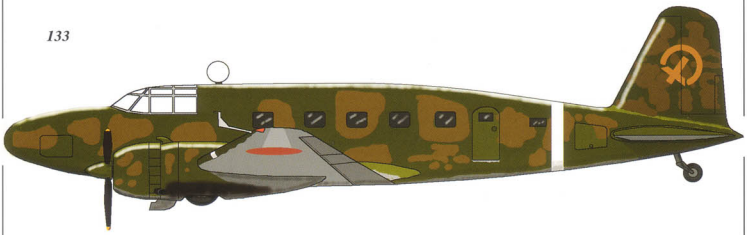


131: *Tachikawa Ki-54c 'Hickory' of 10 Dokuritsu Hikodan Shireibu (10 Independent Air Brigade), at Labuan, Borneo, in August 1945. It was used to transfer the Japanese surrender delegation, under General Baba. The sprayed mottle finish had been concentrated more densely on the engine cowlings than to the rest of the aircraft. The unit markings, which represented the number ten, had been perfectly applied, in contrast to the more expedient surrender crosses. This machine was ultimately sent to Australia for preservation in the Australian War Memorial, although this did not occur.*



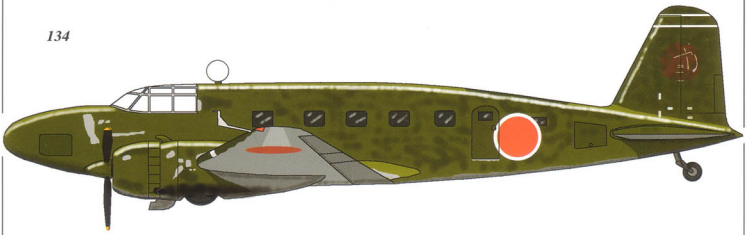
132: *Tachikawa Ki-54c 'Hickory' of Utsunomia Army Air Communications School, Japan, in October 1945, following the surrender. This machine was in a much-oxidised, overall natural metal finish.*

133



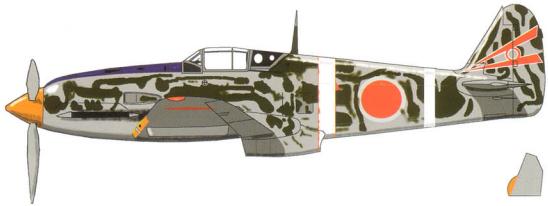
133: *Mitsubishi Ki-57-ll 'Topsy' of Teisin Sentai (Raiding Parachute Group), 3 Chutai. This aircraft had natural metal undersurfaces.*

134



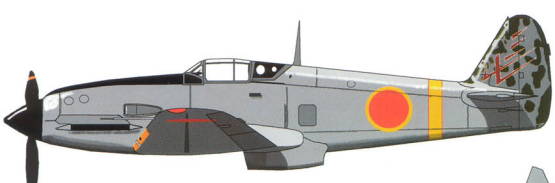
134: *Mitsubishi Ki-57-ll 'Topsy' at Chofu, Japan, in September 1945. This well-used aircraft had natural metal undersurfaces and the unit identifier was partially obscured. The two white bands at the top of the fin had been applied over the mottle finish.*

135



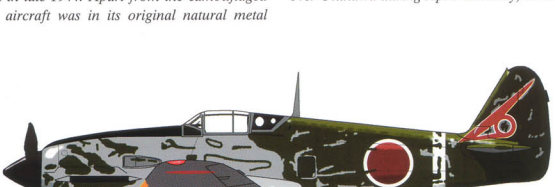
135: *Kawasaki Ki-61-l 'Tony' of 68 Sentai, 2 Chutai, captured at Cape Gloucester, New Britain, in December 1943. This was the chutai commander's personal machine, as indicated by the white command band behind the cockpit. This band had been crudely outlined in red. The original white outline to the fuselage hinomaru had been over-painted, giving a halo effect. No propeller warning stripes were carried. This aircraft was the first Tony to be captured and it should not be confused with a very similar machine from this unit, flown by Major Shogo Takeuchi, which had a much neater command band and carried 46 victory markings below the cockpit.*

136



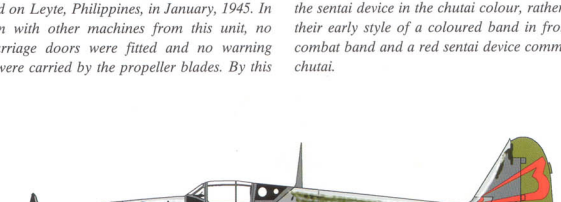
136: *Kawasaki Ki-61-l 'Tony' of 37 Kyoiku Hikotai (Fighter Training Unit), based at Matsuyama, Formosa in late 1944. Apart from the camouflaged tail, this aircraft was in its original natural metal finish. The red / yellow fuselage band indicated its training status, although this unit was operational over Okinawa during April and May, 1945.*

137



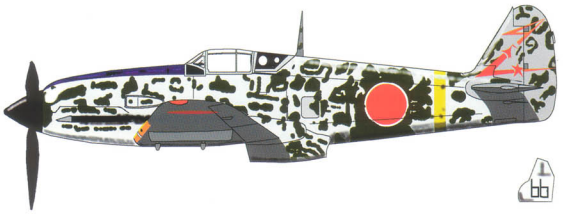
137: *Kawasaki Ki-61-l 'Tony' of 19 Sentai, 2 Chutai, captured on Leyte, Philippines, in January, 1945. In common with other machines from this unit, no undercarriage doors were fitted and no warning stripes were carried by the propeller blades. By this late stage of the war, the various chutai distinguished the sentai device in the chutai colour, rather than by their early style of a coloured band in front of the combat band and a red sentai device common to all chutai.*

138



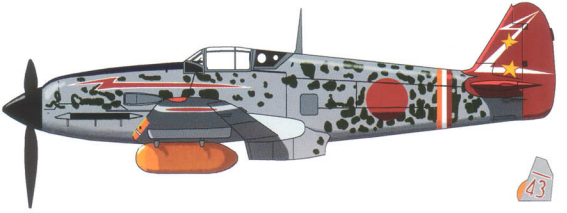
138: *Kawasaki Ki-61-l 'Tony' of 23 Dokuritsu Chutai, based at Karenko, Formosa, but which had crash-landed on Okinawa in May 1945. The unit marking was bright red and outlined in Maroon, whilst the fuselage hinomaru was lower than usual and consisted of the white outline only, which had been superimposed over the sprayed green camouflage. The propeller blades were heavily eroded and any markings which may have been on the undercarriage doors were not visible.*

139



139: *Kawasaki Ki-61-I 'Tony' of 244 Sentai, 1 Chutai, at Chofu, Japan, in September 1945. This machine was painted white overall, with an uppersurface overspray of dark green. The rear portion of the sentai lightning stripe was a rich orange colour, as opposed to the red front part. The combat band was yellow. The inset shows the block-style identification numbers roughly painted upon the undercarriage doors. The propeller was later removed from this aircraft to prevent unauthorised flight.*

140

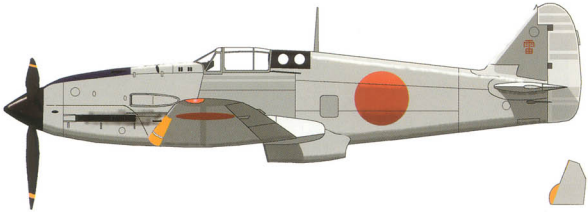


140: *Kawasaki Ki-61-I 'Tony' of 244 Sentai, 2 Chutai, at Chofu, Japan, in September 1945, in a more orthodox basic camouflage scheme than the preceding machine. This unit featured prominently in the Japanese press and adopted a particularly flamboyant marking fashion which, on this aircraft, extended to door numbering in an individual style.*

141

141: *Kawasaki Ki-61-II KAI 'Tony' of 56 Sentai, at Itami, Japan, in August 1945. This machine had natural metal undersides, but also bore green undercarriage doors.*

142

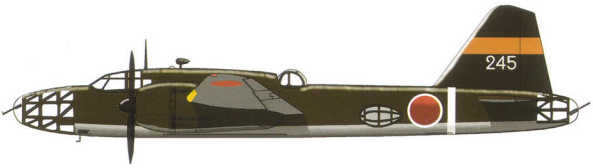


142: *Kawasaki Ki-61-ll KAI 'Tony' of 244 Sentai, Shinten Seiku-tai (Heaven Shaking Air Superiority Unit), at Chofu, Japan, in August 1945. This was a dedicated unit within the sentai that was tasked with air-to-air ramming of B-29s. This machine was in natural metal overall.*

143

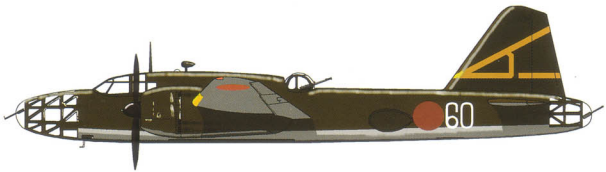
143: *Mitsubishi Ki-67-lb 'Peggy' of 7 Sentai, at Hamamatsu, Japan, in December 1944. This was one of several aircraft that were factory-built specifically for Special Attack operations. At this stage of the war, conventional units were also used in the special attack role and these machines were expended at Okinawa. For its identification, this unit used either a stylised Mount Fuji and River Fuji, as on this aircraft or, from January 1945, a large number seven, followed by the aircraft number.*

144



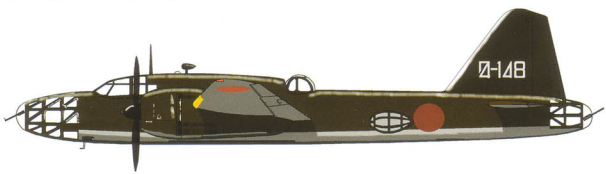
144: *Mitsubishi Ki-67-l 'Peggy' of 60 Sentai, 3 Chutai, at Sushuishi, Japan, in early 1945. This unit operated this type in both the Okinawa campaign and in China. The combat band was carried for the Chinese operations.*

145



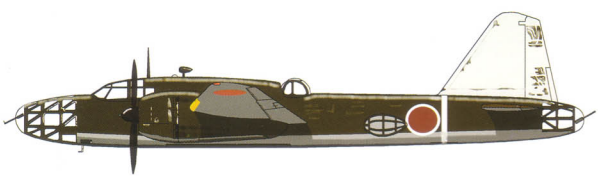
145: *Mitsubishi Ki-67-l 'Peggy' of 61 Sentai, 1 Chutai, at Kagi, Formosa, in July, 1945.*

146



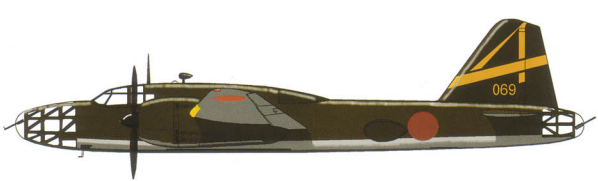
146: *Mitsubishi Ki-67-l 'Peggy' of 74 Sentai, 1 Chutai, at Ochiai, Sakhalin Island, Northern Japan, in July 1945. The unit device was a symbolised '74'. 1 Chutai used numbers in the 100-199 series, whilst the other two chutai used 200+ and 300+ respectively.*

147



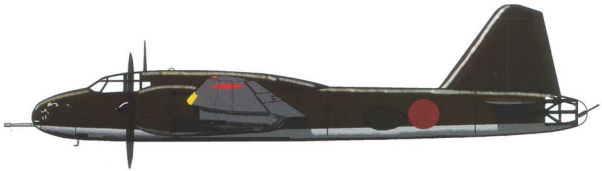
147: *Mitsubishi Ki-67-l 'Peggy' of 170 Sentai, at Kengun, Japan, in August 1945. Most machines of this unit carried the white tail, which was the chosen sentai device. However, others carried the 'last three' of the aircraft construction number on a camouflaged tail, which was a continuation of the practice of 110 Sentai, from which this unit was partially formed. 170 Sentai was one of the few Peggy units to use outlined fuselage hinomaru.*

148



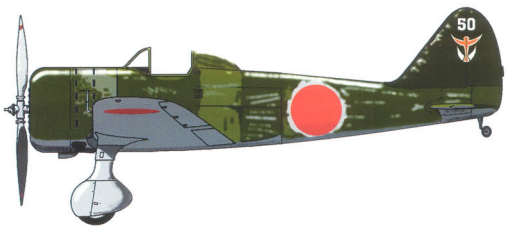
148: *Mitsubishi Ki-67-l 'Peggy' of 14 Sentai, 3 Chutai, at Irumagawa, Japan, in October 1945. This was one of several machines from this sentai which had been adapted as Special Attack weapons. They were intended to be expended against the Allied invasion fleet. Several of the unit's other aircraft had also been fitted with sea-search radar.*

149



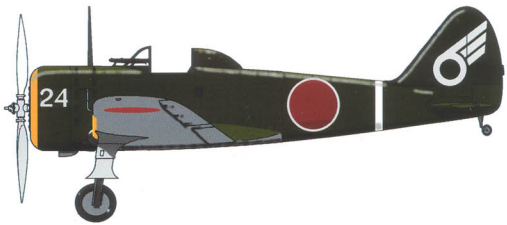
149: *Mitsubishi Ki-109 'Peggy' of 107 Sentai, at Hamamatsu, Japan, in October, 1945, although this unit actually disbanded at the end of July. It was the only unit to operate this bomber-destroyer version of the Peggy, in conjunction with conventional Peggy bomber versions, which were also utilised in the interceptor role. A total of 22 bomber-destroyers were issued and some carried the normal sentai device in chutai colours.*

150



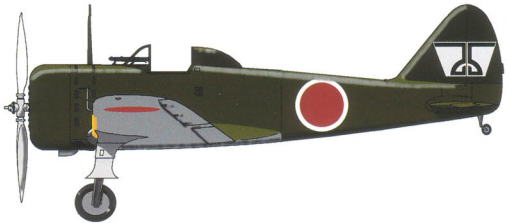
150: *Mansyu Ki-79a (which was the advanced trainer version of the 'Nate') of 1 Yasen Hojyu Hikotai (1 Auxiliary Battlefield Unit) at Sembawang, Singapore, in September 1945. The basic outline on the tail was common for all aircraft operated by this unit, but a few aircraft had a more embellished design, as shown here. However, all of the reconnaissance aircraft within the unit carried a plain white device.*

151



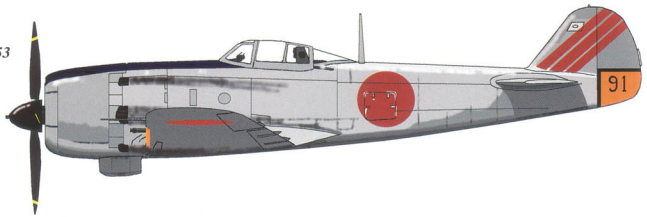
151: *Mansyu Ki-79a of 25 Kyoiku Hikotai (Fighter Training Unit), in Manchuria, from March 1944 until the end of the war. This was an advanced training unit and the aircraft were equipped with gunsights and radios. The unit device also appeared in red.*

152



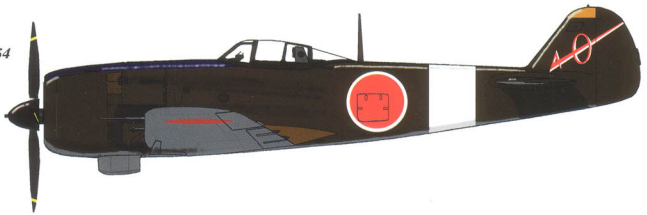
152: *Mansyu Ki-79a of 26 Kyoiku Hikotai (Fighter Training Unit), which operated from a succession of bases in Manchuria, from March 1944 until the end of the war, when it was used operationally against Soviet forces in August 1945.*

153

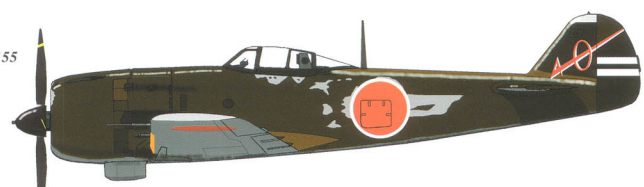


153: *Nakajima Ki-84 'Frank' of 73 Sentai, 2 Chutai, on Luzon, Philippines, in January 1945. This machine was in an overall natural metal finish, although this unit also operated aircraft with green uppersurfaces throughout the Philippines campaign. Some Japanese pilots expressed a preference for the lighter, unpainted machines, because the detrimental effects on detection were believed to be outweighed by performance benefits.*

154



154: *Nakajima Ki-84 'Frank' of 104 Sentai, 2 Chutai, at Ohta, Japan, in August 1945. In view of the particularly large combat band, this may have well been the chutai commander's own aircraft. The red / white unit device was common to every machine within the sentai and the chutai distinctions were coloured fin tops only.*

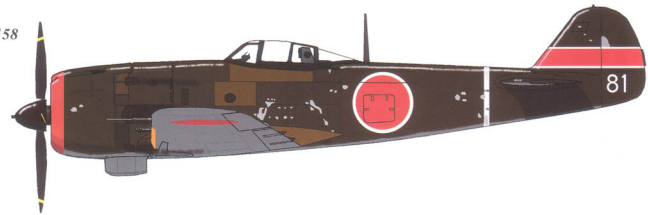


155: *Nakajima Ki-84 'Frank', also of 104 Sentai, Sentai Hombu, but at Changchun, North-eastern China, in August 1945, having been surrendered to Soviet forces. In common with this machine, the other Franks at the same base had prominent white-outlined upper wing hinomaru and white wing tips.*

156: *Nakajima Ki-84 'Frank' of 102 Sentai, 1 Chutai. This paintwork on this machine was heavily eroded towards the rear of the fuselage and no combat band was carried. The spinner was in the chutai colour.*

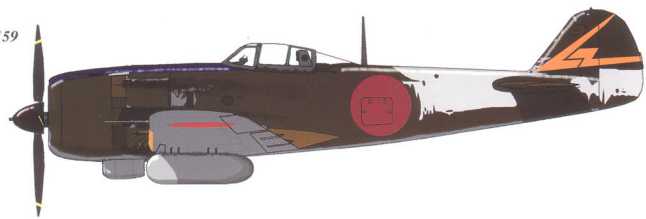
157: *Nakajima Ki-84 'Frank' of 1 Yasen Hojyu Hikotai (1 Auxiliary Battlefield Unit) at Sembawang, Singapore, in September 1945, following reoccupation of the base by the Royal Navy. In common with the other fighters held by this unit, no combat band was carried, although this machine was numbered white 17 at the top of the fin.*

158



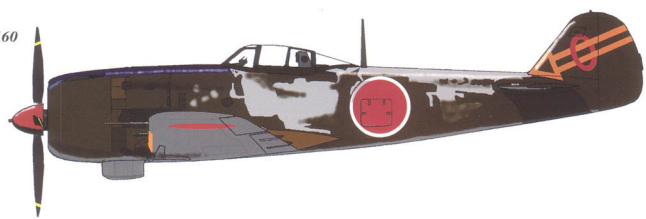
158: *Nakajima Ki-84 'Frank' of 72 Sentai, 2 Chutai, captured in the Philippines in January, 1945. The combat band was noticeably thinner than usual for this type of machine although, by this stage of the war, the use of the combat band had diminished.*

159



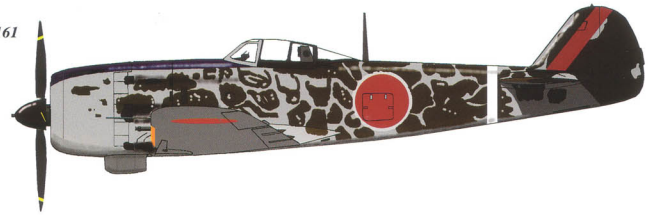
159: *Nakajima Ki-84 'Frank' of 52 Sentai, 3 Chutai, at Tokorozawa, Japan, in September 1945, prior to its demolition. Unlike on other members of the unit, the uppermost yellow diagonal stripe tapered to a point. The fuselage paintwork had eroded in much the same manner as the example from 1 Yasen Hojyu Hikotai.*

160



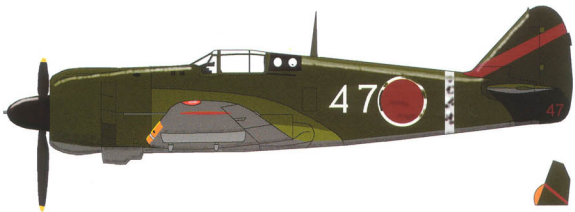
160: *Nakajima Ki-84 'Frank' of 101 Sentai, 2 Chutai, (distinguished by the red spinner), at Shizuhama, Japan, in late 1945.*

161



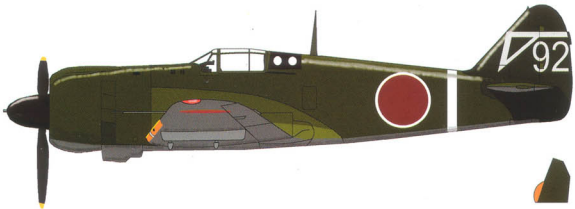
161: *Nakajima Ki-84 'Frank' of 25 Sentai, 2 Chutai, at Hankow, China, in October 1945. This was an unusual finish for a Frank, not least because some of the blotch outlines at the forward end had not been filled in. At the end of the war, this was a composite unit of Franks and Oscars.*

162



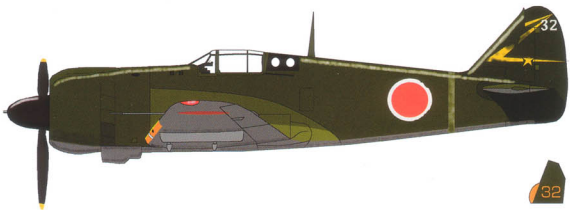
162: *Kawasaki Ki-100-la of 59 Sentai, 1 Chutai at Ashiya, Japan, in June 1945. This was a type that was practically unknown to the Allies and, therefore, it was not allocated a code name. The combat band and the outline of the fuselage hinomaru of this machine were already chipped and eroded. The sentai device was outlined in white on some of the other machines in this unit, whilst combat bands and hinomaru outlines were occasionally omitted.*

163



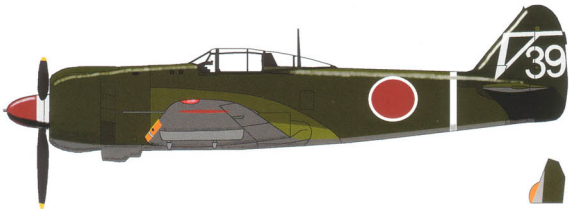
163: *Kawasaki Ki-100-la of 5 Sentai, at Gifu, Japan, in August 1945, one of the 39 similar machines operated by this unit in defence of the Nagoya area. These aircraft carried the final sentai design of the many that this unit had adopted over the years, which took the form of a stylised Roman number five.*

164



164: *Kawasaki Ki-100-la of 244 Sentai, 3 Chutai at Chofu, Japan in September 1945. The undercarriage doors, command band and unit marking had been over-sprayed and had achieved a low visibility finish. The outline to the fuselage hinomaru had been partially over-painted and the hinomaru itself had faded to a pinkish tint.*

165

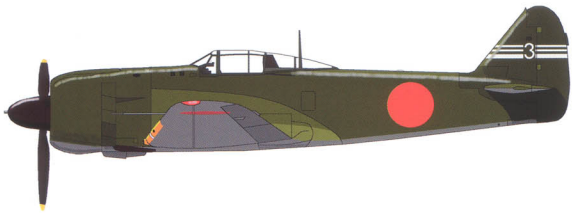


165: *Kawasaki Ki-100-lb of 5 Sentai, at Gifu, Japan, in August 1945. This was the personal machine of the sentai commander, Captain Yasuhide Baba, but apart from the spinner, it carried no other distinctions. The tail numbers were not parallel to each other and the upper edge of the unit device was neither parallel to the ground, nor the flight line, although they were better drawn on the starboard of this machine. Aircraft 48 was not so fortunate, however, since the artist ran out of space on the starboard side, resulting in a particularly narrow number eight.*

166

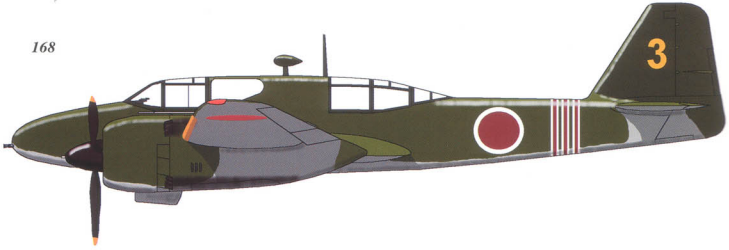
166: *Kawasaki Ki-100-lb of 59 Sentai, 3 Chutai, at Ashiya, Japan, in October 1945. This machine had suffered somewhat from erosion, with the cowling gills, combat band and fuselage hinomaru outline being particularly affected. The fuselage numbers were roughly hand-painted and were rather spindly in form, although the tails of the number 2s were elaborate. The propeller blades had no painted warning tips and a samurai helmet was painted upon the undercarriage doors.*

167



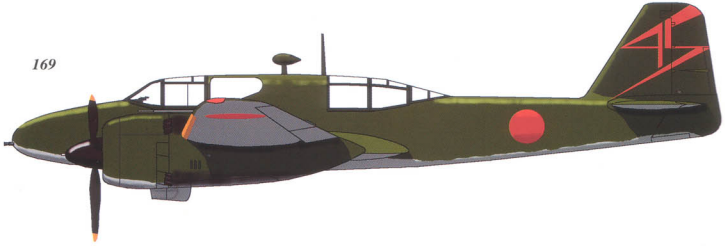
167: *Kawasaki Ki-100-ll of 3 Operational Test and Training Chutai at Fussa, Japan, in September 1945. This aircraft had natural metal undersides. The number 3 was the unit marking, with the horizontal white lines being one of several extra embellishments that this unit adopted. No undercarriage doors were fitted to this machine at the time.*

168



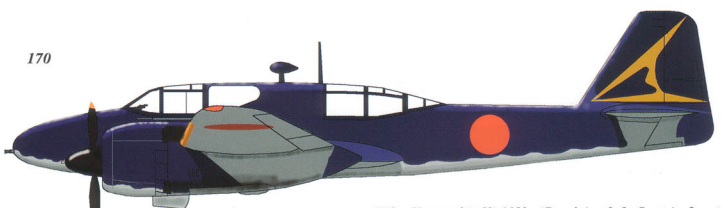
168: *Kawasaki Ki-102b 'Randy' of 3 Operational Test and Training Chutai at Fussa, Japan, in 1945. The yellow 3 was the unit marking, whilst the red / white bands were operational test markings.*

169



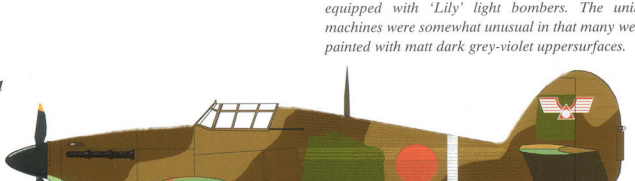
169: *Kawasaki Ki-102b 'Randy' of 45 Sentai, 2 Chutai, in Japan in February 1945, when undertaking bomber-interceptor duties.*

170



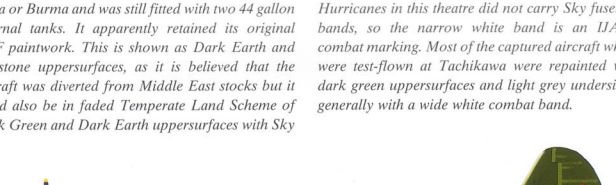
170: *Kawasaki Ki-102b 'Randy' of 3 Sentai, 3 Chutai, in Japan in early 1945. This unit had reformed on this type for bomber-interceptor duties, having been mauled in the Philippines when equipped with 'Lily' light bombers. The unit's machines were somewhat unusual in that many were painted with matt dark grey-violet uppersurfaces.*

171

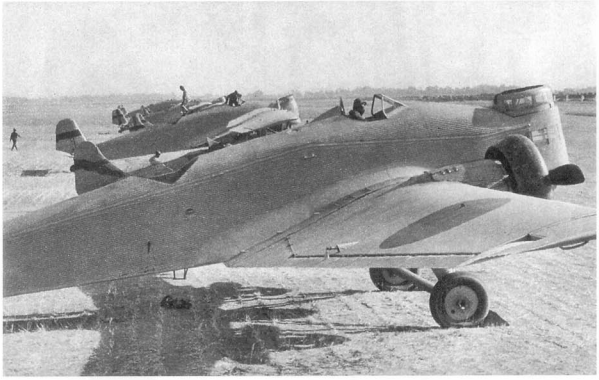


171: *Hawker Hurricane llb (trop) of the Tachikawa Army Test Centre, at Tachikawa, Japan, in late 1942. This machine was, presumably, captured either in India or Burma and was still fitted with two 44 gallon external tanks. It apparently retained its original RAF paintwork. This is shown as Dark Earth and Midstone uppersurfaces, as it is believed that the aircraft was diverted from Middle East stocks but it could also be in faded Temperate Land Scheme of Dark Green and Dark Earth uppersurfaces with Sky undersides. The tail marking and individual aircraft letter had been overpainted and the RAF roundels had been obscured by high-gloss hinomaru. RAF Hurricanes in this theatre did not carry Sky fuselage bands, so the narrow white band is an IJAAF combat marking. Most of the captured aircraft which were test-flown at Tachikawa were repainted with dark green uppersurfaces and light grey undersides, generally with a wide white combat band.*

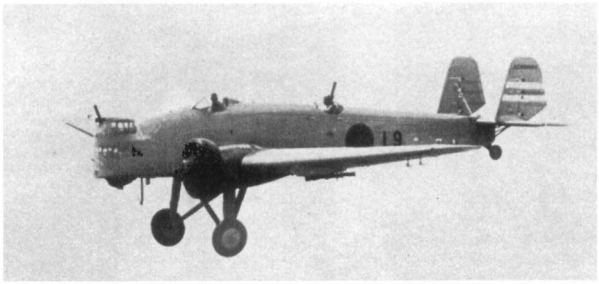
172



172: *Curtiss P-40E of Akeno Hikoshidan Hikotai (Akeno Instructor Air Division), which was found at Yokota (also known as Fussa), Japan, in September 1945, by the occupying forces. This un-armed and radio-less aircraft had been used for operational evaluation and training purposes. As mentioned above, the majority of captured aircraft were repainted, but this one was particularly faded, to the extent that its original markings (including the red pre-war centre spot) showed through the hinomaru, which also had a curious elliptical outline.*



2: *A mixed lineup of Mitsubishi Ki 2 and Kawasaki Ki 3 light bombers, somewhere in China on 13 May 1939 at the start of the first joint Imperial Japanese Army/Navy Air Forces bombing raid (against Xuzhou) of the Sino-Japanese War. All the aircraft appear to be a light grey overall with various permutations of stripes on the tails. These are most likely to represent individual aircraft, rather than the unit*

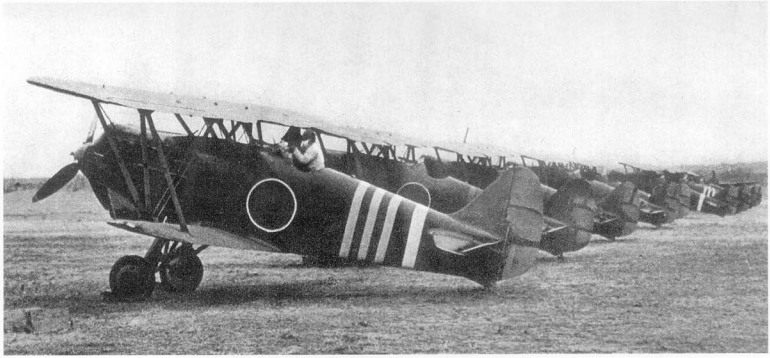


3: *A Mitsubishi Ki 2 'Louise' in flight clearly shows the Junkers K37 influence in its design. The unit is not known, but the simplicity of the early markings is noteworthy*

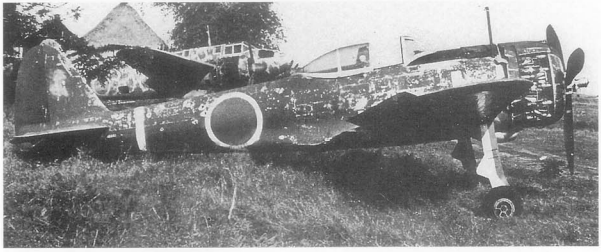
4: *Early in the morning of 28 July, 1938, ground crew cast a critical eye over a Mitsubishi Ki 2-I as it kicks up a cloud of dust at takeoff at the start of the very first IJAAF bombing mission over northern China. Waiting its turn to move onto the runway is a Kawasaki Ki 3 light bomber. These were continually plagued by engine problems, which cannot have been helped by the abrasive dust thrown up from the unsurfaced airfields in China and Manchuria*

5 Right: *A Mitsubishi Ki 30 'Ann' of 90 Sentai takes-off for a raid on Wuhan in China in the late 1930s. The fin stripes and pale rudder indicate that it is a machine of the 3 Chutai, 3 Shotai*

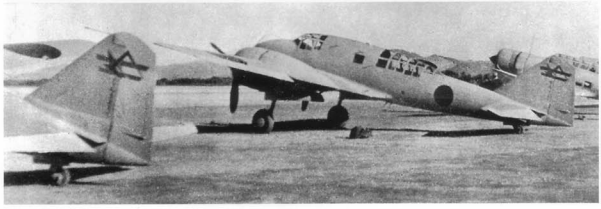
6 Below: *26 October 1938. Ki 10s (Perry) of 1 Fighter Sentai being readied for the first operations in support of the Japanese assault on Nanking, these operations continuing for some six weeks. The crude rudder markings are unclear, but could identify chutais*

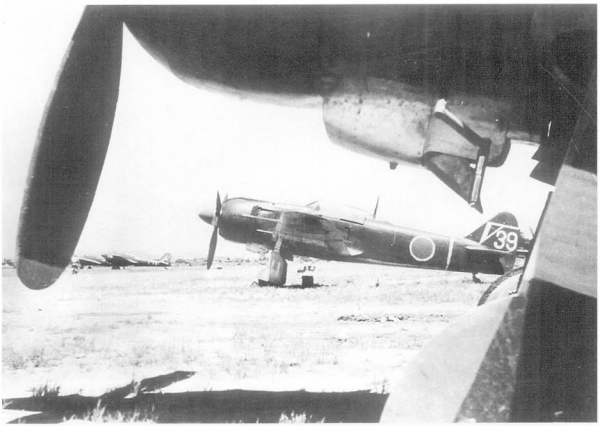


7 Right: *An extremely weathered Nakajima Ki 43-II 'Oscar' of 1 Sentai captured at Clark Field in the Philippines in early 1945. The aircraft carries traces of the white fin leading edge used until 1943, and also the red or blue rudder used from that date, indicating it was from either the sentai hombu, or the first chutai*

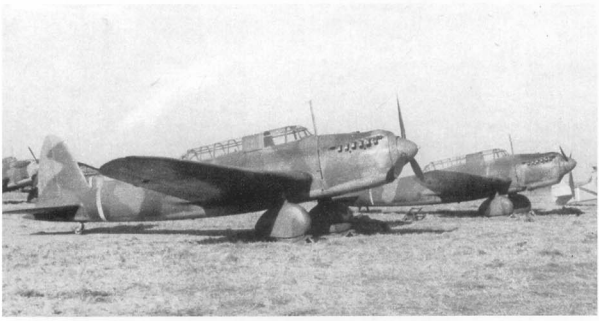


8: *Several overall grey-green Mitsubishi Ki 46 Dinahs and their predecessors, Ki 15 Babs, from 2 Sentai. The unit's emblem representing a seagull flying over the sea is very appropriate to their long range reconnaissance duties*



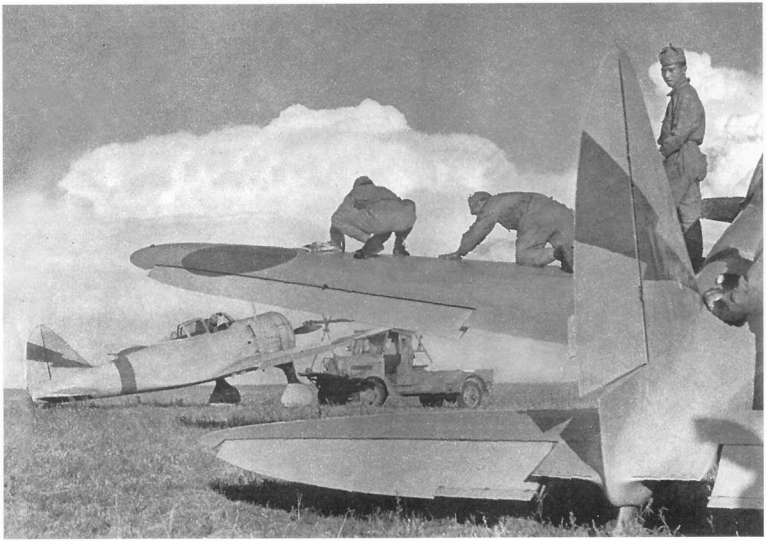


9: *Unknown to the Allies until they occupied Japan, the Kawasaki Ki 100 was one of the most formidable fighters available to the IJAAF. Like the Spitfire Mk IX, it was intended to be an interim design to make use of available engines. In the event both turned out to be superb aircraft, the Ki 100 equipping eight fighter sentais. Aircraft '39' of 5 Sentai, seen here at Kiyoso in June 1945, was flown by Captain Yasuhide Baba, the Sentai commander. The aircraft in the foreground is of interest as the propeller blade has a yellow tip instead of the more usual stripe and the aircraft also appears to have black or dark green wheel doors*



10: *Three Kawasaki Ki 32 'Marys' of 6 Sentai, somewhere in Manchuria during the Nomonhan Incident in summer 1939. No sentai markings are being worn, although a white 'combat stripe' is carried on the fuselage. All three are finished in a three-tone camouflage pattern (the so-called 'China' scheme) on the uppersurfaces. A Ki 10 can just be seen in the right background*

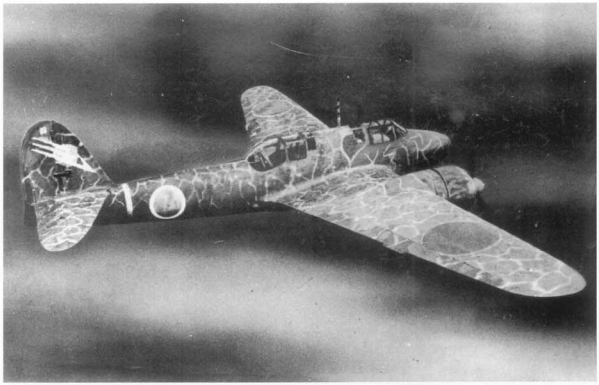
11: *When Indian troops of the 4/7 Rajput Rifles occupied Kalemyo in Burma, some 250 miles from the Chindwin River, on 16 November 1944, they found this Mitsubishi Ki 46 of 8 Sentai on the perimeter of the airfield. This was one of just a few examples of the 'Dinah' to reach the sentai, which was primarily a bomber unit equipped with the Ki 48 'Lily'. The emblem on this machine has been embellished with 'shadows'*



12 Above: *Mechanics of 11 Sentai preparing Nakajima Ki 27 'Nates' of 2 Chutai for action, somewhere on the Manchurian-Mongolian border in summer 1939*

13 Right: *Nakajima Ki 43-II Ko of 11 Sentai, 1 Chutai, as flown by the chutai commander and captured at Cape Gloucester, New Britain, in April 1944*

14: *The last aircraft type to equip 11 Sentai was the Nakajima Ki 84 Ko 'Hayate' (Gale). This weathered but otherwise apparently serviceable example was captured at Clark Field in the Philippines in early 1945. The red and white lightning flash shows that number 46 once belonged to the 2nd Chutai*



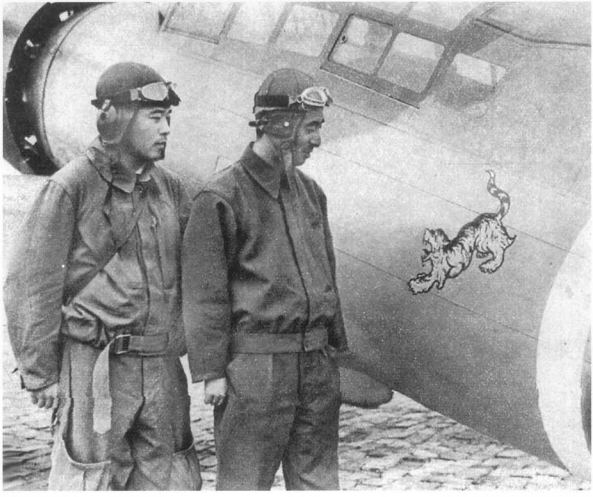
15: *A wartime retouched picture of a Kawasaki Ki 45 'Toryu' (Dragon Slayer) of 13 Sentai. Captured in the Philippines on 1 February 1945, '23' carries the final form of 13 Sentai marking. Well-liked by its crews, the 'Nick' was vulnerable to single-engined fighters, like all of its kind, but was highly effective against bombers. Note how the wing hinomaru have had their white outlines over-painted*

16: *A Mitsubishi Ki 67 'Hiryu' (Flying Dragon), once of 14 Sentai, and captured more or less intact at Irumugawa in Japan at the end of the war. This particular aircraft had been modified for use as a suicide aircraft by the fairing over of the dorsal position and removal of the waist gun blisters and the partial installation of an explosive device in the nose. Reported as being finished in overall brown uppersurfaces with light grey below, the unusual red tail markings probably indicate that this 'Peggy' was from the 2nd Chutai*

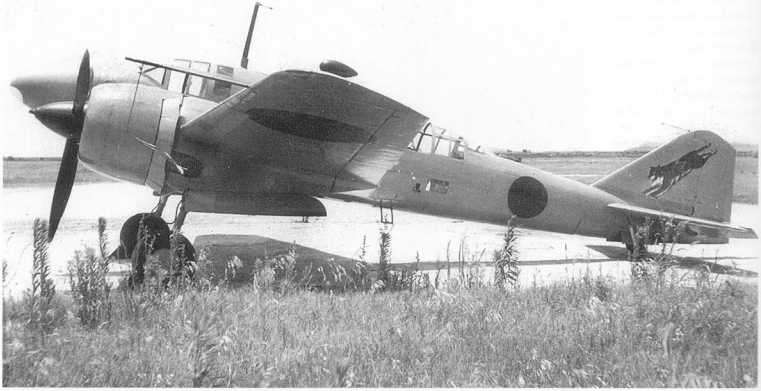
17: *Ground crew work on the ventral gun position of this Kawasaki Ki 48 'Lily' of the 16 Sentai, 1 Chutai, as indicated by the two white stripes on the tail. Similar in many ways to the Bristol Blenheim of the RAF, both types suffered dearly at the hands of enemy fighters, in both types the defensive firepower being wholly inadequate. In the case of the Ki 48, the dorsal gunner did not even have a powered gun turret*

18: *One of the few Japanese aircraft to be well-known in the West prior to 1941 was the Mitsubishi Ki 15, on account of a civil-registered prototype being used for a record-breaking flight between Tokyo and London in 1937. Later named 'Babs' by the Allies, this one is in China with 18 Dokuritsu Chutai. On the fuselage is the unit marking of a tiger in Chinese style, chosen for the animal's ability, in Japanese legend, to run a thousand miles in a day and still fight. A very small number, '35', appeared in black aft of the white stripe*

19: *The crew of the Mitsubishi Ki 15-1 'Babs' seen above admire their unit emblem for the benefit of the Japanese press during a visit to Hankow, China, in 1939-40. The man on the right is believed to be Captain Yoshitsugu Aramaki, pilot of the aircraft. The machine had been camouflaged on the uppersurfaces, probably in the field, with irregular green and brown stripes over the basic overall grey finish*



20: *A late-production Nakajima Ki 43-II Ko 'Hayabusa' (Peregrine Falcon) of 25 Sentai, 2 Chutai, flown by M/Sgt Kushiro Otake from Jogai airfield near Nanking, China, in 1943. The aircraft has been given a sparse mottle of dark green over the basic metal finish, which does little to conceal the aircraft as it is obviously reflecting the sunlight. 25 Sentai spent the entire war on the Chinese mainland*

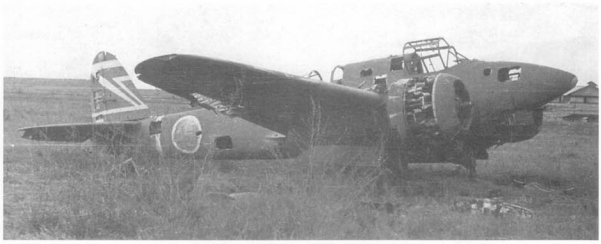


21 Above: *Later in the war, both the aircraft and the emblem of 18 Dokuritsu Chutai (now transformed into 82 Sentai) became more sophisticated. This is a brand new Mitsubishi Ki 46-II in May 1943*

22 Left: *The ubiquitous Isuzu starter truck fires up the engines (and the dust) of this Ki 45-II 'Nick' from 21 Sentai, 1 Chutai, which was based at Palembang in Sumatra between December 1942 and November 1944. Note the unit emblem painted on the truck, a very unusual practice in the IJAAF*

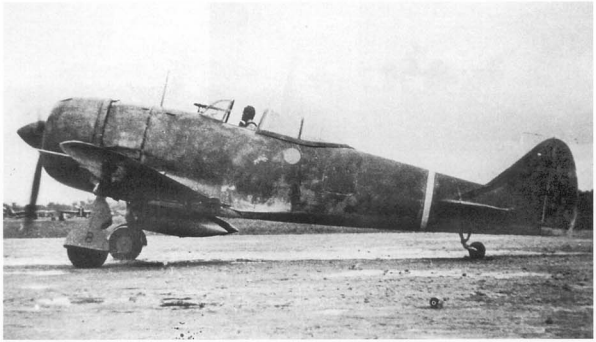
23: *Another of the many IJAAF aircraft captured intact at Clark Field in the Philippines on 5 February 1945 was this Nakajima Ki 44-II Hei, 'Tojo', once of 22 Sentai. The red leading edge to the fin, the unit marking, does not show up well against the overall dull green finish, which has been heavily eroded. On the rudder is a Hiragana character, 'mo', which presumably related to the regular pilot*

24: *This derelict Kawasaki 'Nick' once belonged to 27 Sentai, 1 Chutai. The white chutai marking stands out clearly against the overall dark green or grey camouflage and even from this side it is easy to see how the unit emblem is derived from the numbers '2' and '7'*

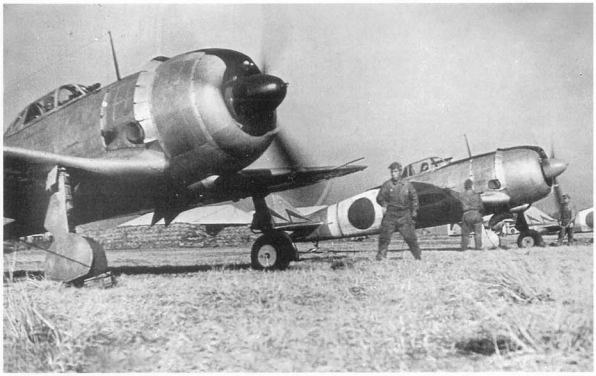


25 Right: *Only very few Kawasaki Ki 102 'Randy' fighters saw operational service. This is Sgt Toshiharu Kageyama of 45 Sentai, 1 Chutai at Hokota airfield in Ibaraki, Japan, in August 1945*

26 Below: *One of a series of pictures of Ki 44 'Tojos' of 47 Sentai, 3 Chutai, taken at Narimasu airfield near Tokyo in late 1944, soon after the third chutai was formed. The unit took over their aircraft from 87 Sentai in December 1943 shortly before that unit moved to southern Sumatra. Some of the aircraft in this picture appear to have yellow 'bandage' markings behind the fuselage hinomaru*



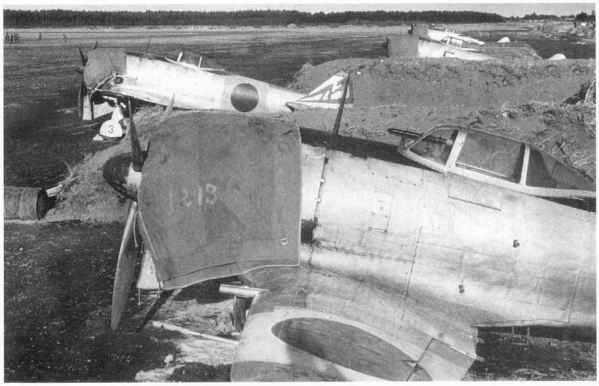
27: *This Nakajima Ki 44 'Shoki' (Demon Queller) is the eighth preproduction example being flown by Capt Yasuhiko Kuroe of the newly formed 47 Dokuritsu Chutai during operational trials in Malaya in January 1942. In October 1943 the unit became 47 Sentai. The early unit emblem was the stripe along the fin leading edge, supplemented by a disc (behind the cockpit) which ultimately carried the unit's 'ronin' badge (a ronin being a kind of roving samurai), a suitable emblem considering the unit's independent status*



28: *Another view of 47 Sentai 'Tojos', seen here at Narimasu on home-defence duties. The red unit emblem indicates 2 Chutai. Note that the nearest aircraft has no wing guns*

29: *An unusual type to find in 47 Sentai markings was this battered Ki 43-I 'Oscar', used for training while the unit was at Narimasu, near Tokyo, from late in 1943*

30 Right: *These 'Tojos' in blast pens carry the emblem of 70 Sentai over the earlier marking of the 47th. This probably indicates the time to be about April 1945, after the 70th had returned from China in November 1944 for home defence duties, based at Kashiwa near Tokyo, and when 47 Sentai had begun refitting with the Ki 84*



31 Below: *The pilots of 50 Sentai, 3 Chutai, show off the unit markings on their Oscar Is to the press after their return to Tokorozawa, Japan, in June 1942, following their successful operations in Burma*

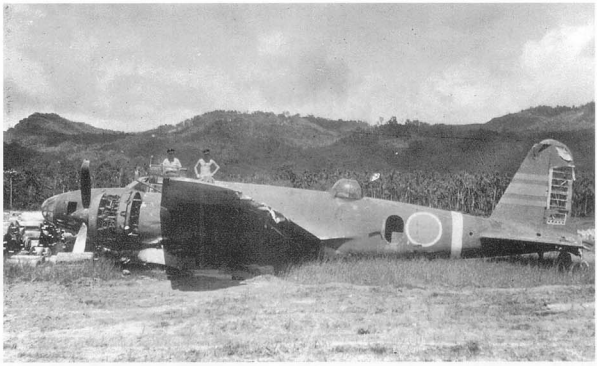
32: *Pilots of 50 Sentai, 3 Chutai, preparing to take off from Tokorozawa for a formation flight for photography purposes in June 1942. Note the archaic telescopic gunsights protruding through the windscreens of these Nakajima Ki 43-Is*

33: *Late-production Kawasaki Ki 45 KAI 'Nicks' of the special air-to-air ramming unit of 53 Sentai which formed part of the aerial defences of Tokyo. Known as the 'Shinten Seiku-tai' (Heaven-Shaking Air Superiority Unit), four aircraft of the sentai were modified by the deletion of all armament and the dorsal position was partly faired over. Apart from the sentai emblem on the tail, these four aircraft all carried a 'kaburaya' (turnip-headed arrow) marking on the fuselage*

34 Left: *The burnt-out wreckage of a Ki 43 'Oscar' of 54 Sentai, 2 Chutai at Muroran airfield on Hokkaido on 24 October 1945. The 1st Chutai of this unit was reformed as 24 Dokuritsu Chutai in February 1944 at Palembang, Sumatra*

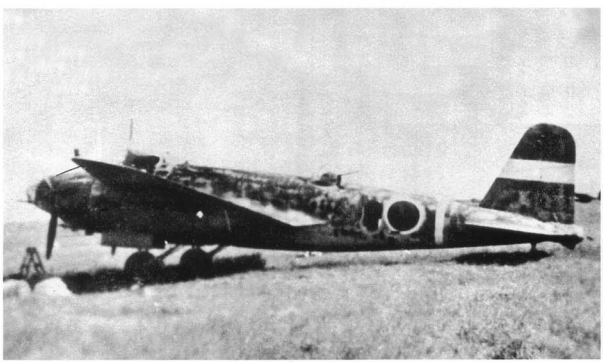
35 Below: *Kawasaki Ki 61-I Tei c/n 3294, seen in October 1945. The aircraft is entirely unpainted except for the fabric-covered control surfaces. This dull finish is enlivened only by the anti-dazzle panel, the hinomarus and the red emblem of the 2nd Chutai, 56 Sentai, on the fin*

36: *This abandoned late-model Mitsubishi Ki 21 'Sally' with a dorsal turret carries the tailstripes of 58 Sentai. Unfortunately it is impossible to tell from the tone of the original photo whether the stripes are red or yellow and so whether it is from 2 or 3 Chutai respectively. Both date and location are unknown*



37: *Mechanics attaching long range belly fuel tanks to a Nakajima Ki 27 'Nate' of 59 Sentai, 2 Chutai during the Nomonhan Incident of 1939. The unit was based at Saienjo near Nomonhan during September that year and saw combat only once, on the 15th of the month, when it claimed 11 shot down. These were almost certainly overestimated, although the fighting was definitely fierce, the 1st Chutai losing five pilots. The object in the foreground is one of the fuel tanks with its connection points on the top surface*

38: *Another view of Nates from 2 Chutai of 59 Sentai, either on the Manchurian plain near Nomonham in September 1939 or Hankow in China where the unit was based from November 1938 until August 1939. The weather was most certainly hot*



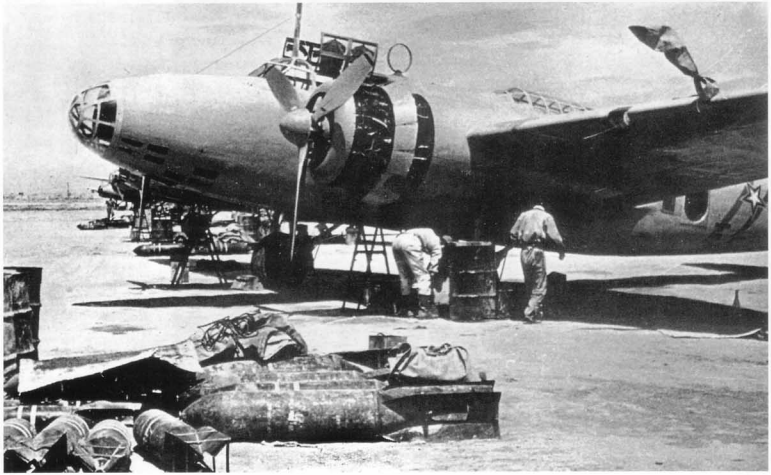
39 Top: *A Ki 43-II of 59 Sentai, 2 Chutai, captured in New Guinea by American forces*

40 Above: *Kawasaki Ki 100 Ko of 59 Sentai, 3 Chutai at Asiya, Fukuoka, Japan, in October 1945*

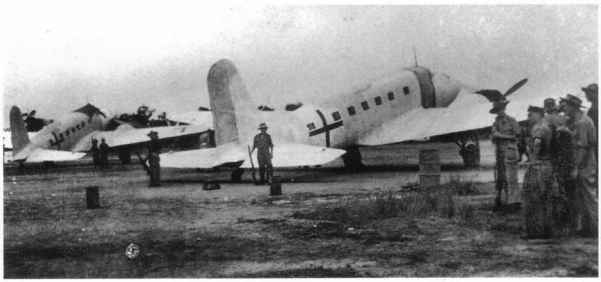
41 Left: *A 60 Sentai, 1 Chutai, Mitsubishi Ki 21 'Sally' seen at Nanking in 1943. Finish is believed to be overall grey-green with a dark green mottle on the uppersurfaces*

42 Right: *Mitsubishi Ki 21s of 60 Sentai, 2 Chutai, drone over the Chinese mountains towards their target of Yan'an, southwest of Taiyuan, on 15 October 1940. The diagonal fuselage bands enclosing a star, the emblem of the chutai, can be made out on the nearest aircraft*

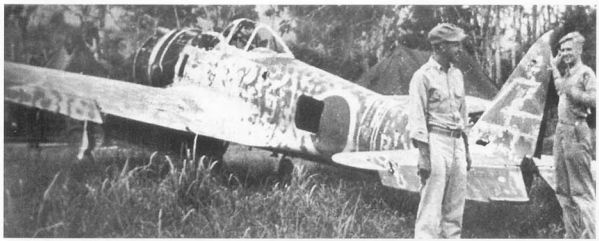
43 Below: *Mechanics attending to a Mitsubishi Ki 21 'Sally' of 2 Chutai of 60 Sentai. Like many of the type, the aircraft retains the overall light grey-green finish, enlivened only by the hinomarus and the chutai emblem. This one has both a grey-green and a black outline to the yellow star*



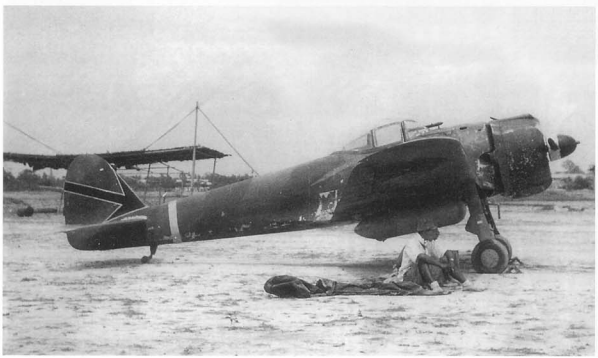
44: *Allied troops guarding Mitsubishi Ki 57s which have carried a Japanese delegation to surrender talks. Location is believed to be Borneo. Finished in overall white with green cross surrender markings, what appears to be the emblem of 63 Sentai can just be made out under the whitewash on the fin. Although a fighter unit, 63 Sentai would have needed transport or liaison aircraft*



45: *A Nakajima Ki 27 Otsu, 'Nate', of 64 Sentai, 1 Chutai, being flown by Sgt Taku Kazushige over Kwangtung, China, in January 1940. At the time, the chutai, also known as the 'Maruta Butai' (Maruta Unit) after the chutai commander, Captain Fumio Maruta, was operating independently of the sentai. The sentai emblem is the red eagle behind the cockpit, the chutai emblem being a yellow circle on the vertical tail. This is reinforced by the yellow band on the fuselage and the stripes across the wings. The colour of the vertical bars within the circle indicated the shotai (flight) with white for the 1st, red for the 2nd and yellow for the 3rd, while the number of bars (1-3) identified the individual aircraft within the formation. This is thus the 2nd aircraft of the 2nd shotai of the 1st chutai of the 64th sentai*

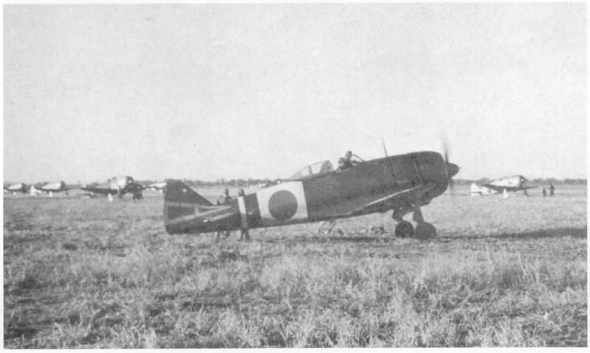


46: *American troops and a well-worn Nakajima Ki 43-II Otsu of 77 Sentai, 2 Chutai, in New Guinea. Unusually, this unit used blue as the colour for the 2nd chutai, this particular machine also having two white-outlined blue bands around the fuselage just aft of the hinomaru to indicate use by the chutai commander. All the unit personnel perished in the jungle*

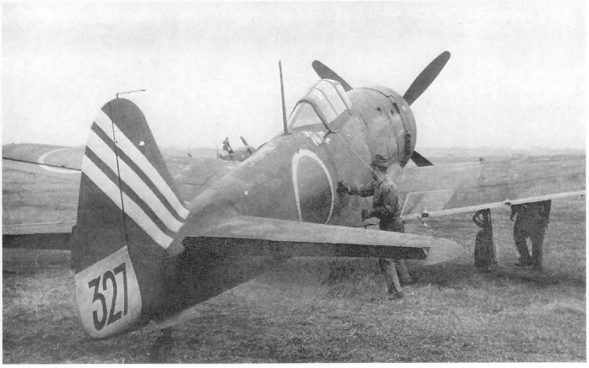


47: *Mechanics take shelter from the sun under the wing of an early model Ki 43-I of 64 Sentai, soon after the unit arrived at Sungei Patani in Malaya from Java in mid-March 1942. There the unit had claimed 18 victories in two weeks under the leader-ship of the famous Tateo Kato. The red and white spinner and arrow sentai marking on the fin indicate that this is a machine of the 2nd chutai. The close similarity of the 'Oscar' to the IJNAF's A6M2 meant that Allied aircraft were claiming encounters with 'Zeros' even though the Japanese navy was hundreds of miles away*

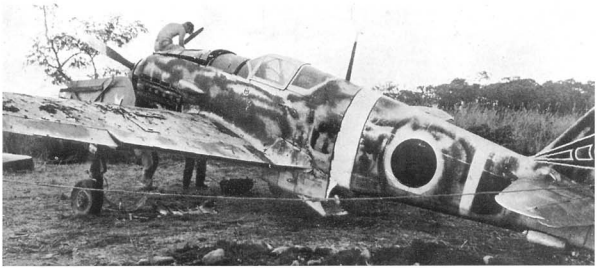
48: *Rows of Nakajima Ki 43s lined up awaiting destruction at Metabaru airfield on Kyushu, Japan, at the end of the war. Nearest and third from front are two Ki 43-III Kos from 65 Sentai. The emblem on the fin was apparently derived from the number '65' and an image of Mount Fuji. Originally the unit was a light bomber formation operating the Kawasaki 'Lily'*



49: *A dark green (or black) camouflaged Nakajima Ki 44 of 70 Sentai with the fin emblem in yellow, which identifies it as being from the 2nd Chutai. The white backgrounds to the hinomaru, reminiscent of the hachimaki worn around the heads of many Japanese suicide pilots, indicate that the aircraft is on home defence duties. The location and date is probably Matsudo near Tokyo sometime between February and August 1944*



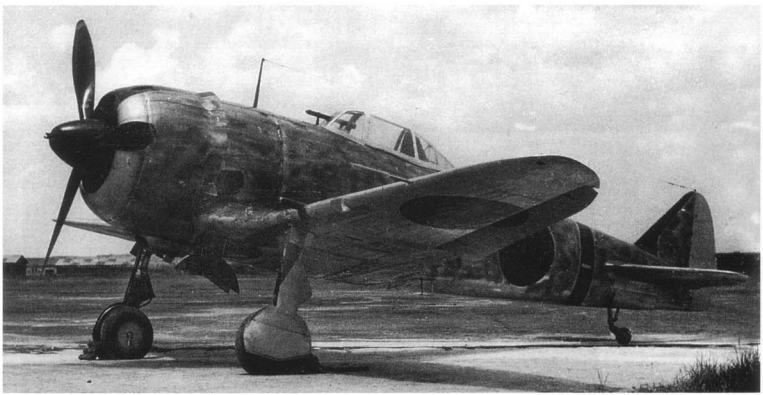
50: *A logical development of the Ki 43, the Ki 84 was one of the best IJAAF fighters. This is one of several from 73 Sentai, 1 Chutai, assembled at Tokorozawa airfield near Tokyo in October 1944 for the benefit of the press. C/n 327 carries its number on a yellow segment on the rudder and appears to wear a highly unusual (for the 'Frank') two-colour segment camouflage pattern on the wings. In December the sentai was despatched to the Philippines where it was effectively wiped out by the end of January 1945*

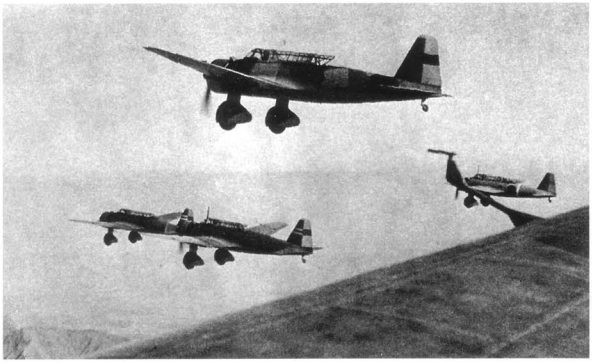


51: *This Kawasaki Ki 61-I Ko of 68 Sentai, 2 Chutai, was captured more or less intact at Cape Gloucester, New Britain, in December 1943. The first 'Tony' to be closely examined by the Allies, it wore the chutai commander's white band just behind the cockpit. This band had a crude red outline. Just visible below the windscreen on the original print is what appears to be a personal emblem on a disc*

52 Left: *The tail of a 77 Sentai, 2 Chutai, 'Nate' which was deliberately crashed into a blast pen of 113 Squadron, RAF, on 29 January 1942 at Mingaladon, Burma. The dying pilot, 1st Lt Kanekichi Yamamoto, only narrowly missed a Blenheim, which can just be seen on the right*

53 Below: *Nakajima Ki 44-II Ko (s/n 1134) of 85 Sentai, seen at Nanking in China, and flown by the sentai's leading ace, (20 victories), Koki Wakamatsu, who led the 2nd Chutai. The red fin leading edge is the sentai emblem, while the red fuselage band identifies the chutai leader. Wakamatsu was killed in action on 18 December 1944*





54: *21 January 1940. A gaggle of camouflaged Mitsubishi Ki 30s of 90 Sentai (also known as the Yamasei Butai at the time) on their way to bomb the town of Luo'chan, then occupied by Chinese Communist forces. The yellow rudder and single tail stripe indicates that the nearest machine is from the 2nd Chutai, 1st Shotai*

55 Right: *Nakajima Ki 84s of 102 Sentai, 2 Chutai, kicking up a storm of dust in April 1945 during the Okinawa campaign. Note the 200l drop tanks which added 600km to the aircraft's range*

56 Below: *An unpainted Ki 84 of 104 Sentai in Manchuria at the end of the war. The red sentai emblem and fin tip identify it as belonging to 1st Chutai*

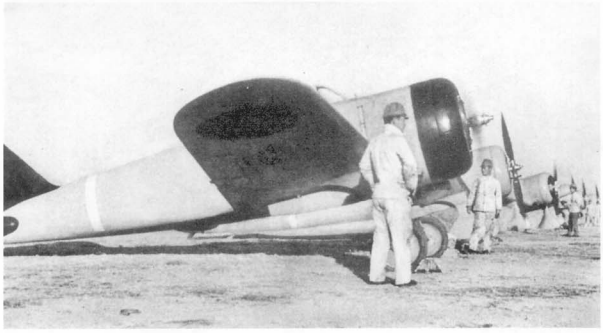
57 Above: *An American soldier poses in front of a Nakajima Ki 4-III Ko on an airfield on Formosa in 1945. The aircraft is from the Hombu (Staff) Chutai of the much-travelled 204 Sentai, as shown by the red and white fin leading edge. '01' may indicate that this was the sentai commander's aircraft*

58 Left: *A Kawasaki Ki 61 -I Tei of 244 Sentai. C/n 4424 was flown by the sentai commander, the flamboyant Major Tembico Kobayashi, in defence of Tokyo*

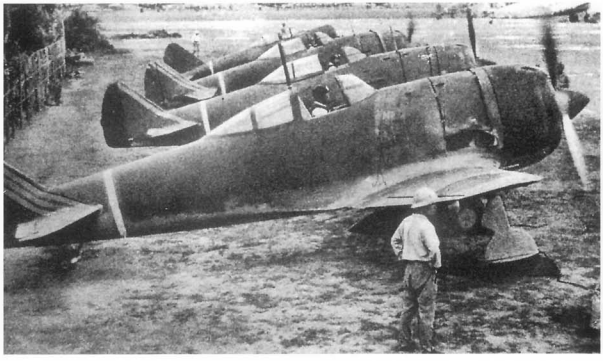
59: *American troops examining a Nakajima Ki 43-II Otsu of 248 Sentai at Alexishafen in eastern New Guinea shortly after the end of hostilities in the area. The unlucky uniy arrived in New Guinea in November 1943 and was almost immediately decimated, being officially disbanded in July 1944*

60: *An overall dark green or grey Mitsubishi Ki 46-II 'Dinah' which carries the peculiar emblem of the little-known I Yasen Hojyu Hikotai (1st Auxiliary/ Reserve Field Unit). Date and location both unknown*

61: *Nakajima Ki 27 Ko 'Nates' from 10 Dokuritsu Chutai somewhere in China in 1937. The nearest aircraft with the red engine cowling may be the aircraft of the unit commander, Captain Kiyoshi Kimura. The aircraft wore black tails as a unit identifier, a colour rarely used in the IJAAF*



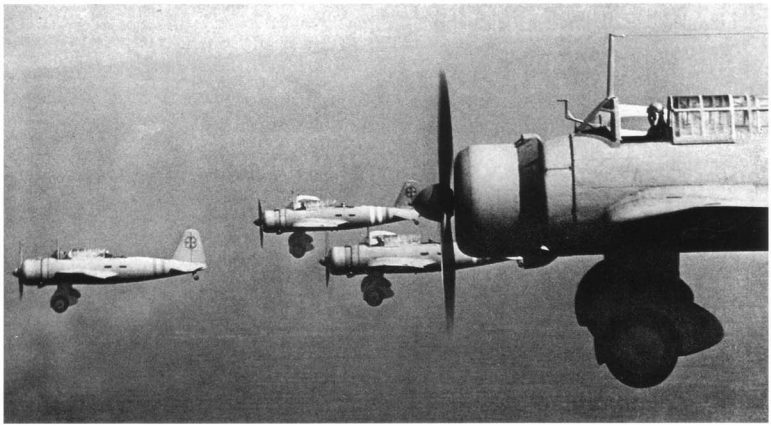
62: *The first four pre-production Nakajima Ki 44s during service trials in early 1942 with 47 Dokuritsu Chutai which had been specially formed in November 1941 at Tachikawa, in Japan, for the purpose. Seen here later in French Indo-China the unit was unofficially known as the 'Kawasemi' (Kingfisher) unit. In October 1943 it became 47 Fighter Sentai. Each aircraft carried a number of yellow stripes on the fin, the nearest aircraft being s/n 4404, the fourth prototype, flown by Master Sergeant Ito*



63 Above: *A natural metal Kawasaki Ki 61-I Ko, '05', of 37 Rensei Hikotai based at Matsuyama in Taipei, Formosa*

64 Left: *Seen here at Kallang airfield, Singapore, in 1946, this Tachikawa Ki 55 was possibly once of 2 Kyoiku Hikojo, (No 2 Training Airfield), as the remains of a circular emblem very similar to that unit's can just be made out on the rudder. The Ki 55 was used extensively for advanced training by embryo IJAAF fighter pilots*

65: *Another Tachikawa Ki 55, this time in service with the fledgling Indonesian air force. Many abandoned Japanese aircraft were seized by the Indonesian nationalists at the end of the war who marked them as their own by the simple expedient of painting half the hinomarus with white paint. This example still carries the emblem of one (or possibly two) unidentified IJAAF training units on the rudder*

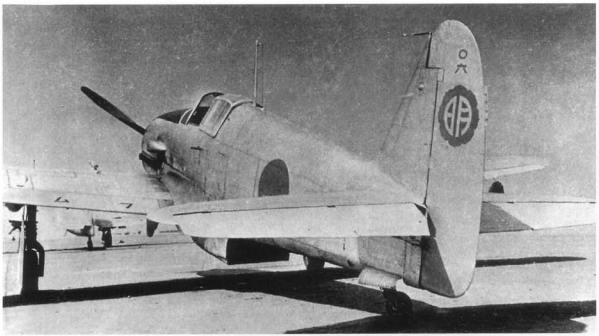


66 Above: *A formation of pale grey Mitsubishi Ki 30s from the Hokota Hikoshidan Hikotai. The emblem is based upon a crossed swords motif*

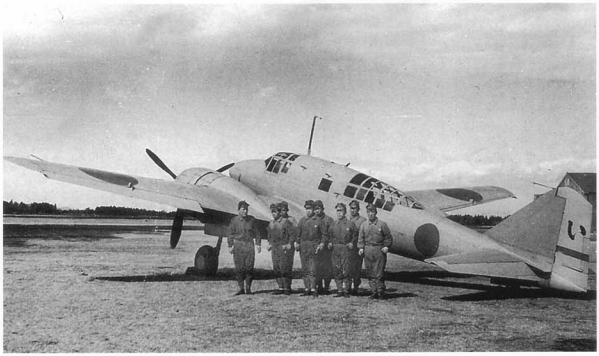
67 Right: *A Mitsubishi Ki 46-III Otsu of 16 Dokuritsu Hikotai at Kiyosu airfield, Aichi, Japan, in summer 1945*

68: *A bright orange Tachikawa Ki 55 'Ida' in the snow at Ôtani, Hokkaido, in northern Japan. The unit has not been identified*

69: *A flightline scene typical of almost any air force training school in World War II. These are Tachikawa Ki 9 'Spruce' trainers in service at the Army school at Kumagawa, Japan, whose neat emblem is on the rudders. The bright orange colouring of these training aircraft led them to be known as 'Akatombo' (red dragonflies) which is also the name of a famous Japanese traditional song. Both air and ground crew learnt their trades at schools such as these*



70: *Advanced training was carried out at schools such as that at Akeno, where this Kawasaki Ki 61 was in service. The fabric covered flying surfaces of the aircraft are probably a light grey-green colour, the rest of the airframe being in natural metal. The characters on the rudder read '06' from the top*



71: *Mechanics in front of one of their charges at the Tokorozawa Army Maintenance School. Obviously many different types of aircraft served in such schools; all seem to have been identified by a simple horizontal black bar and an individual Hiragana character on the rudder. This Mitsubishi Ki 46 is 'ii'*

72: *As the end of the war approached, most of the experienced pilots of the IJAAF, such as this anonymous member of 50 Sentai, were dead. With little time or opportunity for proper training, their replacements were not up to the standard of those of 1941. Even so, the young pilots were still prepared to die for their country, either in conventional air combat or by suicidal 'Taiatari' (crashing) attacks*

73 Left: *Groundcrew fuel up a Nakajima Ki 43-III Ko of 19 Shimbu-tai (suicide unit) seen at Chofu, Japan, between 29-31 March 1945, shortly before the unit transferred to Chiran in the south ready to attack US forces on Okinawa on 4 May. All guns were removed to save weight and gain speed in the final plunge. It is a dreadful irony that 'shimbu' means 'to heighten morale'. The unit emblem is partly based on the Kanji character 'ku' (9)*

74 Below: *A Ki 61-I Otsu whose rudder at least has had several owners, the last being 149 Shimbu-tai. Sasebo or Ashiya, Japan, 17 October 1945*

GLOSSARY

In written Japanese there are three 'alphabets'. Two of these, *Hiragana* and *Katakana*, are the native Japanese-derived characters, while the third are Chinese in origin and are known as *Kanji*. Kanji generally have the same meaning in both Chinese and Japanese, but the pronunciations are totally different. There are many thousands of Kanji characters, but customarily only 1,850 are in common usage. Hiragana are used to represent vowel sounds such as a, ii, u, e, o. Katakana (more angular in appearance than Hiragana) have the same sounds as Hiragana but are written differently and are similar, in a sense, to capital letters and are used to represent foreign words imported into Japanese or for emphasis. To complicate matters further for non-Japanese, many of these characters also have different readings known as '*on*' and '*kun*'. It is not proposed to discuss those any further here–for the purposes of this glossary the usual pronunciations are given in Roman characters (known as *Romanji* to the Japanese).

Red	*Aka*	赤
White	*Shiro*	白
Yellow	*Kiiro*	黄色
Green	*Midori*	緑
Blue	*Ao*	青
Black	*Kuro*	黒
Grey	*Hai-iro*	灰色
Brown	*Chairo*	茶色
Silver	*Gin-iro*	銀色
Colour	*Iro*	色
Above	*Ue*	上
Below	*Shita*	下
Overall	*Uwappari*	上っ張り
Air	*Hikô, Koku*	飛行／航空
Aircraft	*Hikoki*	飛行機
Air Unit	*Hikotai*	飛行隊
Army	*Rikugun*	陸軍
Air Army	*Kokugun*	航空軍
Air Division	*Hikoshidan*	飛行師団
Air Brigade	*Hikodan*	飛行団
Regiment	*Sentai*	戦隊
Battalion	*Daitai*	大隊
Company	*Chutai*	中隊
Flight	*Shotai*	小隊

HQ	*Hombu*	本部
Unit	*Butai*	部隊
Reconnaissance	*Teisatsu*	偵察
Bomber	*Bakugekiki*	爆撃機
Fighter	*Sentôki*	戦闘機
Training	*Kyoiku*	教育
Independent	*Dokuritsu*	独立
Direct		
Co-operation	*Chokkyô*	直協
Flying	*Rensei*	練成
Airfield	*Hikojo*	飛行場
Field (of battle)	*Yasen*	野戦
0	*Rei / Zero*	零／0
1	*Ichi*	一
2	*Ni*	二
3	*San*	三
4	*Shi / Yon*	四
5	*Gô*	五
6	*Roku*	六
7	*Shichi / Nana*	七
8	*Hachi*	八
9	*Ku*	九
10	*Ju*	十
100	*Hyaku*	百

SHIMBU-TAI (Special Attack Units)

8 Nick

18 Oscar

19 Oscar

21 Oscar

23 Sonia

24 Nick

42 Ki-79

53 Oscar

56 Tony

57 Frank

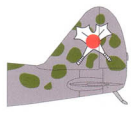
58 Frank

68 Ki-79

72 Sonia

110 Tony

113 Ki-79



149 Tony

182 Frank

Banda
Lily

Fugaku
Peggy

Giretsu
Sally

Kakegawa
Sally

Kikusui
Helen

Sakura
Dinah

Evidently, in common with the Sentai numbering system, not all of the available numbers were utilised, leaving gaps

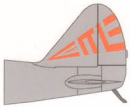
208 Dokuritsu Hikotai
Hickory
(1945)

65 Sentai
Oscar
(1945)

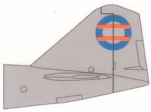
2 Rensai Hikotai
Oscar
(1945)

9 Rensai Hikotai
Oscar
(1944-45)

Hakujoshi Kyodo-Hikotai
(Hakujoshi Instructor Flying Unit) Oscar (1943)



Harbin Kyoiku-Hikotai
(Harbin Training Unit)
Nate (1943)



10 Kyoiku-Hikojo
(Training Airfield)
Dinah

Tachiarai Rikugun Hikogakko
(Tachiarai Army Flying School) Spruce, Nate, Oscar.

Tokorozawa Army
Maintenance School
(carried on all types with an individual character above the bar) (1940-45)

22 Shimbu-tai
(individual aircraft number only)
Oscar

181 Shimbu-tai

Frank

Definite information concerning the emblems on this page came to hand just as this book was going to press. They are consequently out of sequence, but are included for completeness.

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